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The Buda-Pesth Corporation Gas Works	78	9,500,000
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The Avoidance of Glare and the Use of Shades and Reflectors.

[Synopsis of Lecture delivered by MR. J. S. DOW at the Polytechnic, Regent street, London, Friday, January 31st.]

In the last lecture[1] it was pointed out how very intimately connected with photometric problems is the physiological construction of the eye; but the peculiarities of vision are at least equally important in connection with illumination. An analogy may readily be traced between the eye and the camera. The eye lens, like the camera lens, can be focussed for near or distant objects; only the adjustment is made by muscles which alter the shape of the lens, making it thicker or thinner, thus altering the focal length, instead of actually moving the lens to-and-fro. In the camera, again, we are familiar with the "stop," the small aperture placed in front of the lens when we desire to get very good definition and to lengthen the exposure. Somewhat similarly in the eye we have the iris diaphragm, which contracts and expands according as the light impinging on the eye is strong or weak, thus altering the amount of light that actually enters the eye in the same way that a camera stop does. Lastly, we have the very sensitive retina of the eye, containing the minute light-percipiant "rods" and "cones," and the photochemical pigment which is now believed to be the basis of vision. The reception of the image on the retina, the subsequent chemical change, and the mental picture of this image formed in the brain may be likened to the image which is developed on the photographic plate. It may be said that the image in the eye fades away while the image on the plate, after development, remains; but this is probably merely because the photographic image is comparatively so much stronger. Cases are on record in which severe exposure to brilliant light has led to permanent images on the retina, with permanent damage to sight. Moreover, having looked at a very glaring source, even for a short time, we do see an "after-image" which may take quite a long time to fade away.

One other resemblance to the photographic plate may be noted. We know that an attempt to photograph very bright objects results in fog and halation. Even so, a very brilliant light cannot be clearly seen by the eye, but appears to spread into a blurred mass; and in the same way as, when we expose a plate to suit the bright objects in the field of view, the objects of modern brightness are lost and do not "come out;" so, the eye, when asked to accommodate itself to bright-glaring objects in the foreground, fails to make out the darker things behind.

These preliminary remarks lead on naturally to the subject of "glare." The eye differs from the camera in being automatically adaptable within wide limits. On first going into a dark room one finds it impossible to see anything; yet, as the iris-diaphragm and the retina gradually adjust themselves, things begin to take shape, until eventually we can see quite clearly. Prolonged living in the dark will make the eye quite astonishingly sensitive—almost like that of a nocturnal bird or animal. In like way the eye can readily adapt itself to the brightness of sunlight, which is incomparably greater than the brilliancy of ordinary artificial illumination.

But, it will be observed, that the process of adaptation takes time. The eye suffers strain and discomfort when subjected to abrupt and sudden changes. We are conscious of a distinct "jar" when the lights are suddenly turned up in a cinematograph theater; and, for the same reason, the eye soon finds it intolerable to work by a flickering and wavering light. It is continually trying to keep pace with the changes in brightness and failing to do so.

Besides objecting to severe "successive contrast" the eye may also be offended by undue "simultaneous contrast." This is to say, it cannot adapt itself to a very bright light, and a light of moderate intensity at the same time. This accounts for the sensation of glare we experience on entering a room in which there are many bare mantles or metallic filaments. The eye is unprepared for those bright objects and, even when it has adapted itself to them, it fails to appreciate moderately bright objects properly in consequence. The glaring effect of a very bright source is especially trying in dark surroundings. Thus a bright light in a dark cellar, at the docks, or in a dark road, when it is seen against a pitchblack background, is usually more troublesome than the same source would be in a lightly papered room.

In order to summarize the conditions which one should aim at in order to avoid this impression of glare, Prof. L. Weber, of Kiel, has suggested the following recommendations:

(1.) It is generally desirable to screen down the brightness of modern illuminants to a value not exceeding about 2½-candle power square inch (approximately the brightness of a white cloudy sky).

(2.) Lights should be so placed that their angle with the normal direction of vision of the eye is not less than 30°. This is based on the idea that, when lamps are placed at a sufficient height, they are not troublesome, because the eye is shielded by the brow.

1. See *ante*, p. 116.

(3) The contrast between the brightness of adjacent objects should not be more than 100 : 1.

It may be freely admitted that it would not always be easy to comply with these rules in practice; but still they serve as a useful basis, if applied with reasonable latitude, and it will rarely be found that much is really lost by extra precautions to avoid glare. The truth is that even to-day, in spite of the campaign on this subject started by the Illuminating Engineering Society in London, about 3 years ago, the degree of inconvenience suffered from glaring lights is not properly appreciated. We still see merchants filling their windows with unscreened incandescent lamps; the ordinary street lamps are still not nearly as efficiently screened as they should be; and there are even now quite a number of public buildings in which the lamps are not equipped with proper forms of shades and reflectors.

At present the subject of glare is being dealt with in special detail, because it leads us at once to the chief functions of globes, shades and reflectors. These might perhaps be summed up as follows:

(1) To tone down the brilliancy of the source.
(2) To direct the rays of light where they are chiefly needed.
(3) To soften the shadows.
(4) To serve as ornamental objects in themselves.

Shades have been made from many materials: Cardboard; frosted, cut, opal and prismatic glass; paper and metal. At the present time it may be said, broadly speaking, the most scientifically designed shades in general use are those of glass or metal. The ordinary opal shades, still largely used in England, are open to the objection of not complying with: They do not adequately screen the metal filament lamp (though they were doubtless somewhat more suitable in this respect for the carbon filament now passing away type). Scientifically worked out forms of milky glass shades are now beginning to appear, being known under various names (alba, opalux, veluria, equilux, etc.) For some years prismatic glassware has been the most familiar type of scientifically designed unit. As is well known such glassware can be obtained in the E, I and F types, so as to concentrate or distribute the light in various ways. The same method has been applied to metal reflectors, having a semi-mat interior. Spacing rules are given for these units so that even illumination can be obtained with the various types. But the most potent reason for their success is that the polar curves of light distribution have been accurately determined. One knows that, by using a standard form of reflector, with a lamp of specified candle power, one will obtain a certain definite illumination at the working level. The tendency in England during recent years has been to attempt to determine exactly what degree of illumination on the working plane is needed for various industrial operations, and this will doubtless be the basis of legislation on the subject in the future. One can readily see, therefore, how important it is, when designing an installation, to be able to foresee whether the illumination will come up to the required standard.

In the great majority of practical cases we want to receive most light immediately below a lamp, so as to illuminate a bench, desk or table. This a suitable reflector enables us to do, simply by taking the rays which would otherwise escape uselessly out sideways (and probably strike the eyes and cause glare), and redirecting these rays downward where they are wanted.

As an example of this quality, Mr. Dow showed a small cabinet, with a dark interior, containing side-by-side a bare lamp, and a similar lamp equipped with a metal reflector. A measurement with the holophane lumeter instrument showed that the illumination under the reflector was more than ten times that in the other case. Various other forms of shades, opal, enameled iron, etc., were tried in the same way, the characteristics of each type being pointed out.

Prismatic glass reflectors have the advantage that the loss of light should, theoretically, be very small. Such light as is transmitted through the glass is not lost. It merely passes out into the room and prevents the upper part thereof being unduly dark in comparison with the working plane; but for local lighting, where the shade is placed close to the eyes, an opaque reflector is usually desirable for factory lighting, and the steel type is undeniably advantageous.

Mirrored glass reflectors, "trough-reflectors," etc., are coming into very extensive use in England for shop lighting. What is perhaps one of the most scientific and interesting mirrored glass reflectors recently brought in is the "Uniflux" design, worked out by Messrs. S. D. Chalmers and V. H. Mackinney. This is used with tubular lamps, and is so shaped that a very even illumination can be obtained over quite an extensive flat surface. It should, therefore, be very useful for illuminating pictures, placards, facades, etc. It is known to be a difficult matter to get a reflector which will cover a large area really effectively.

Mr. Dow exhibited a sample of this reflector and threw on the screen a slide showing the frontage of White's Club (St. James's street, London), which was illuminated by concealed lamps in a long length of Uniflux reflector on Coronation night. The carving on the front of the building, and the floral decorations as well, were admirably shown up by this form of concealed lighting.

As an illustration of the importance of shadow in certain kinds of work we may take the art room. One method, which is very usual in the Midlands, in England, is to have a central chandelier, carrying a number of lamps in diffusing globes, 4, 8 or 12 of which can be switched on together. By this arrangement one can vary the intensity of the illumination and also the softness and depth of the shadow.

Consideration of shadows leads to the question of the comparative advantages of direct and indirect lighting. The three chief advantages of an indirect system are: (1) That the actual source of light is completely screened from the eye; (2) that the light, being diffused over such an extensive surface, is readily distributed into all corners of the room (this is a special advantage when illuminating complicated machinery); and, (3), that the glare from shiny surfaces, art paper, etc., is very much reduced. It may be pointed out that indirect lighting is not "shadowless," although the shadows certainly are very soft.

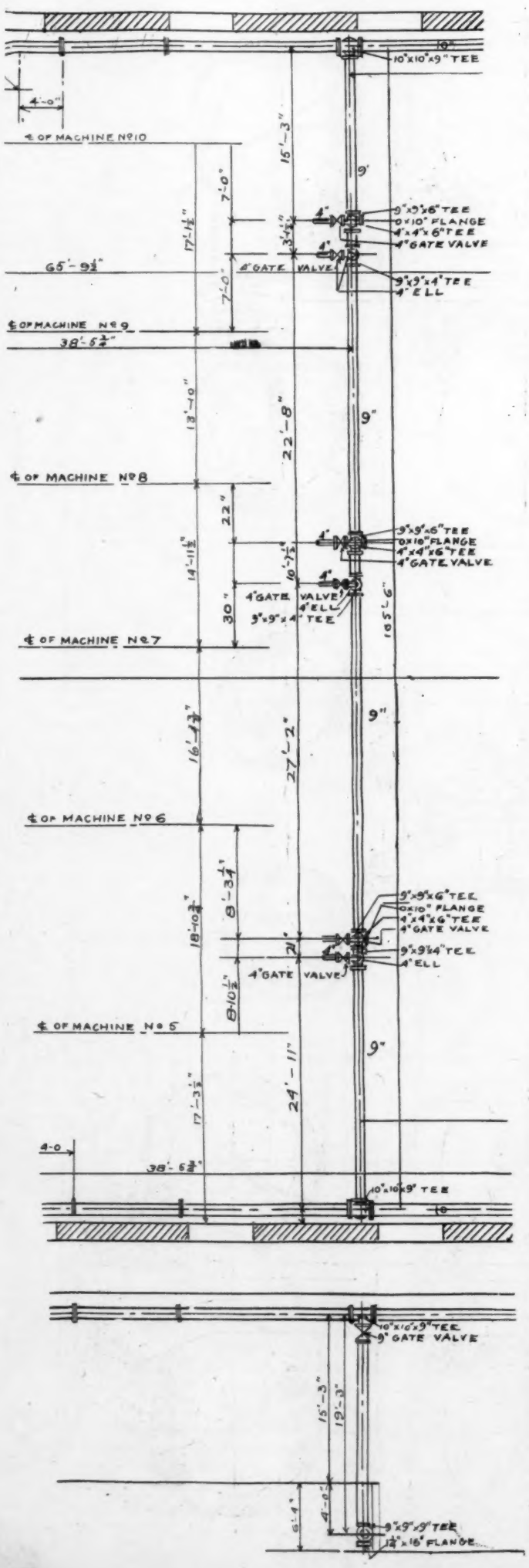
On the other hand some people profess to find in indirect lighting a certain monotony and flatness, and the tendency seems to be rather in the direction of semi indirect methods. It is curious that, up to the present time, such methods have not been widely used in England, in connection with gas lighting. They seem to have been used more in the United States, and high pressure indirect lighting has been used with advantage in the schools in Germany. More recently, however, some units of this kind have been introduced and will doubtless prove popular. For some time the gas industry has rather lacked enterprise in developing new shades and reflectors, but there are signs that more striking results in this direction will now be available.

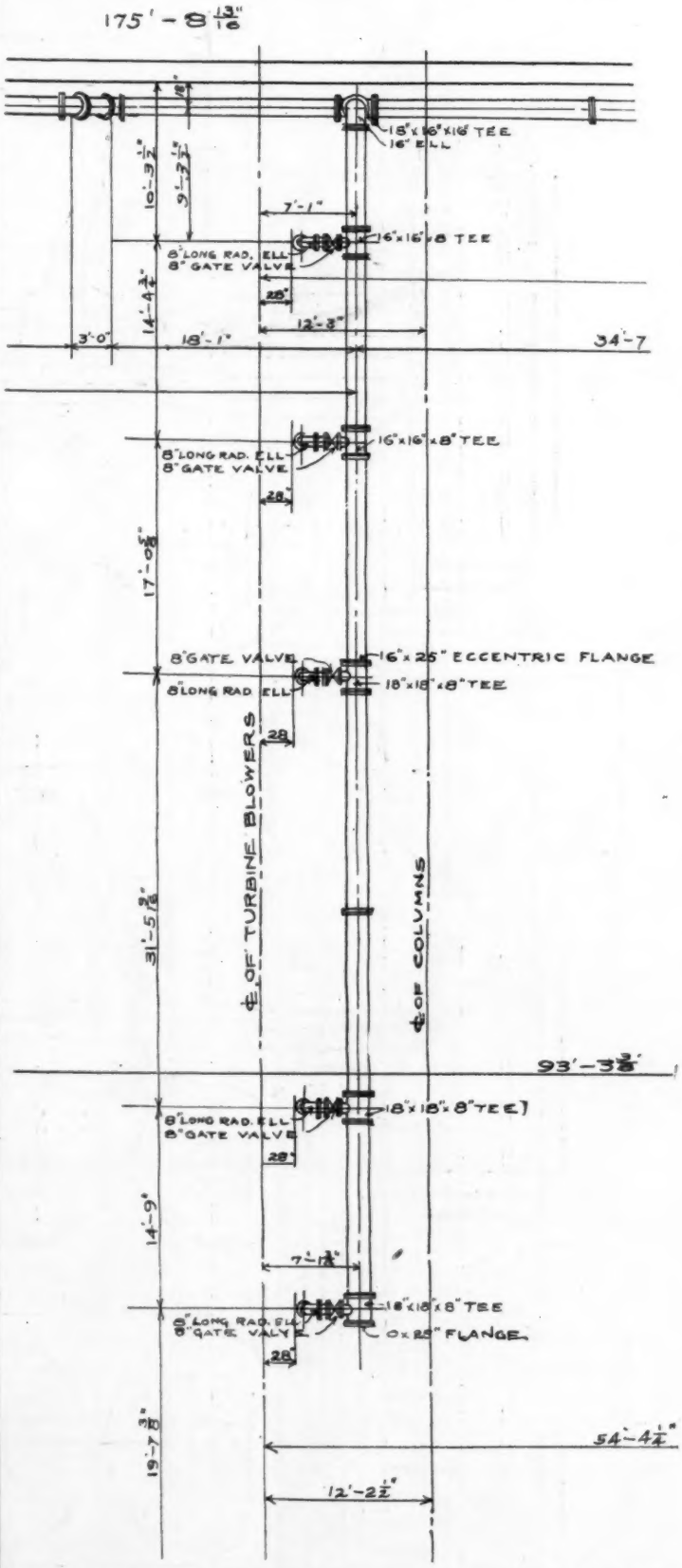
The Use of Turbo-Blower Sets in Water Gas Plants.

The turbine driven blower set bids fair to be as popular in gas works, as it is in the central station or the isolated power plant, where it is widely used for driving boiler feed and condenser circulating pumps, forced draft fans, electric lighting generators and exciter sets. Because of its high speed the turbine runs the standard blowers now in use on high pressure work with a high overall sufficiency. This speed is (in most cases) higher than procurable with direct-connected motors, while engine sets waste steam, space and bring belt troubles. In addition, as the exhaust steam is free from oil, it may be used under generator fires. Other important reasons why the turbine set is replacing reciprocating sets would include its absolute reliability, there being only two wearing parts in the single-stage type, resulting in practically negligible repairs, the attendance only amounting to the occasional filling of the ring oil bearings. With the small turbine there is no repacking of the valves, and as they occupy only $\frac{1}{8}$ to $\frac{1}{4}$ the space of the reciprocating engine they are extremely valuable in gas works located in the large cities.

A large number of water gas plants throughout the country are raising their blast pressures more and more, the average pressure being in the neighborhood of 21 inches, W. G., while the maximum is 40 inches, W. G. The higher pressures shorten the "blowing period" and so give relatively longer "making periods" effecting a greater total output of better gas per hour. To illustrate what is being done in this connection it seems desirable to consider the case of the plant of the Peoples Gas Light and Coke Company, Chicago. This Company manufactures by the Lowe, Springer and Hanlon process and use 22 turbine driven blowers, the turbines being of the single stage Terry type.

At the North Station, located on West Division street, on the Chicago river, this Company has recently installed 6 U. G. I., three-shell, water gas machines with turbine driven blower sets. In the accompanying illustration the arrangement of these gas machines is shown. The five blower sets are mounted on a common center line, the ultimate arrangement being for three pairs, placed with the blower ends adjacent. The grates of gas machines 5, 6, 9 and 10 are 11 feet in diameter, while those of machines Nos. 7 and 8 are 9 feet 6 inches in diameter. Each is handled, with its respective carbureters and superheaters, by a single blower set. No. 8 was installed

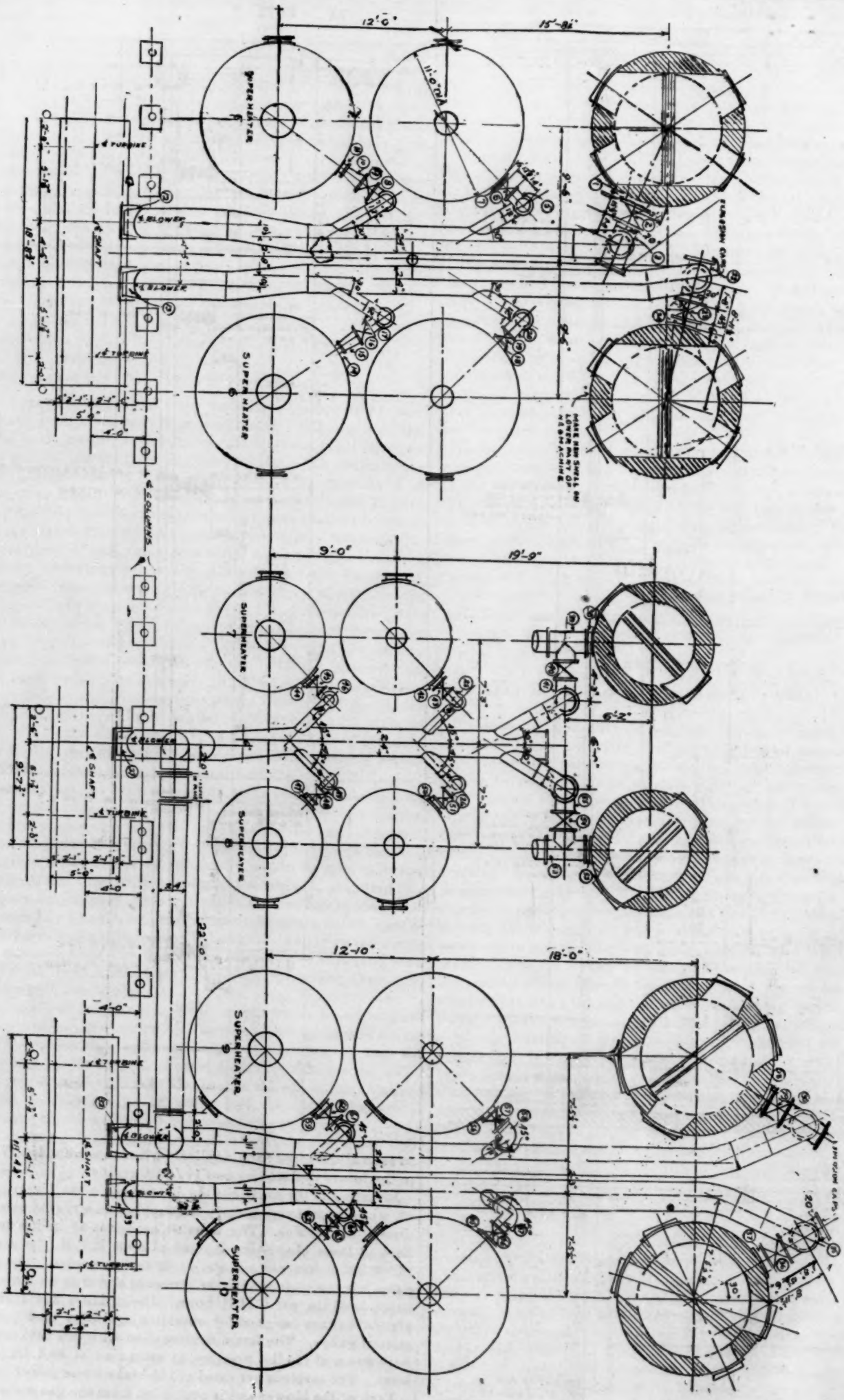




so as to allow space for a duplicate when machines Nos. 7 and 8 are in the future replaced by two 11 feet machines.

Referring to the drawings the blower set in the foreground is No. 10, which shows very clearly the supply and exhaust steam connections of the turbine. The exhaust header is 18 inches in diameter. Each of these blower sets is rated at 2,200 R.P.M., for a capacity of 16,000 cubic feet per minute, at 30 inch pressure. The guaranteed steam consumption, at 125 lbs. pressure and with an atmospheric exhaust, is 35 lbs. per B.H.P. hour. The turbines are furnished with glands that are designed for operation against a back pressure of 4 pounds gauge. The steam consumption with this back prssure, and with steam at 125 lbs. pressure, is estimated at 38.5 lbs. per B.H.P. hour. The turbines are rated at 160-brake horse power

Each of the blower sets is controlled from the gas maker's floor by


12'-0"
15'-9½"
SUPERHEATER 5
SUPERHEATER 6
SUPERHEATER 7
SUPERHEATER 8
SUPERHEATER 9
SUPERHEATER 10
9'-0"
19'-9"
12'-10"
18'-0"
22'-0"
4 TURBINE
4 BLOWER
4 SHAFT
1ST TURBINE
4 COLUMNS
2ND TURBINE
3RD TURBINE
4 TURBINE
4 BLOWER
4 SHAFT
1ST TURBINE
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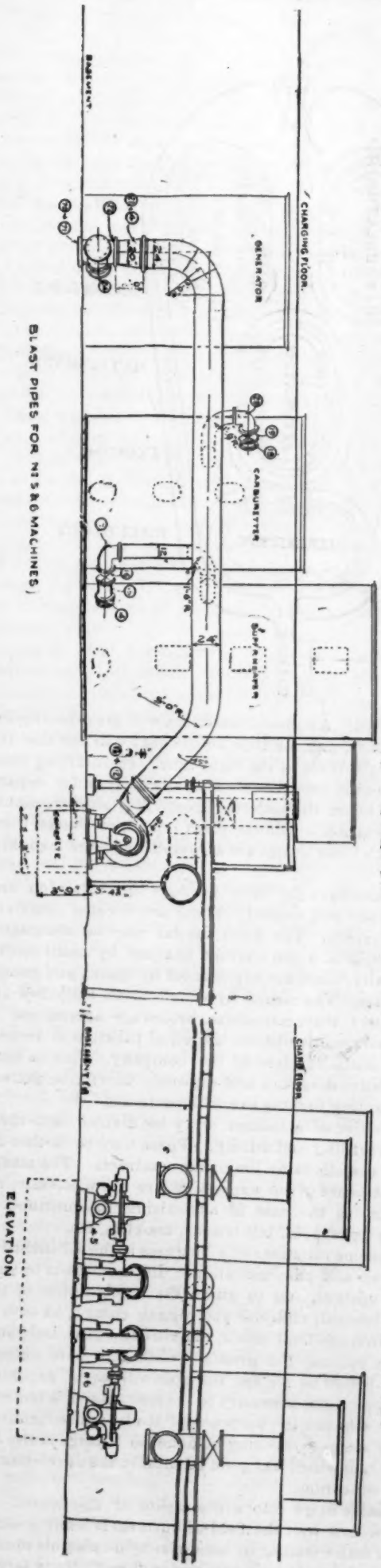
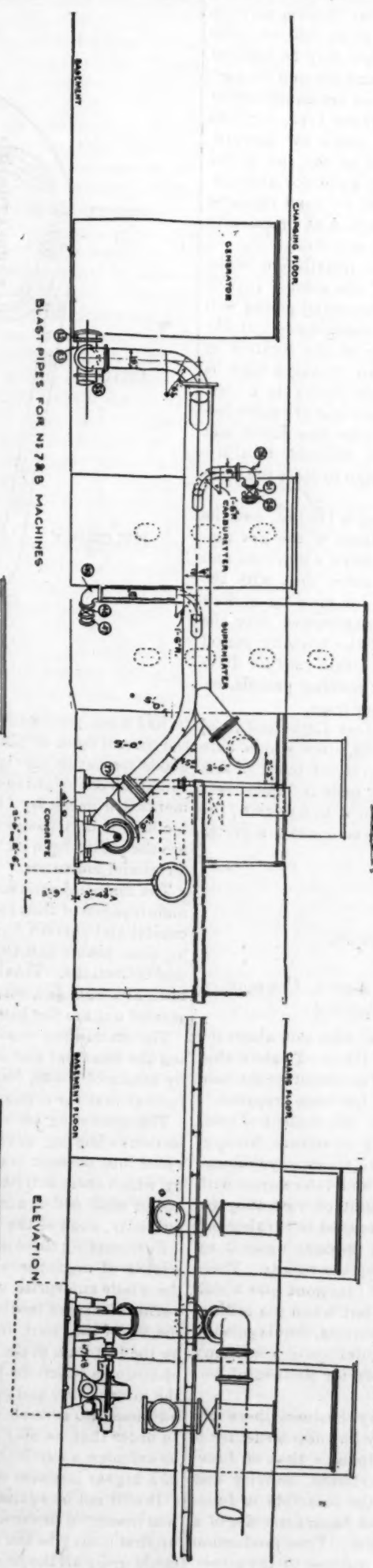
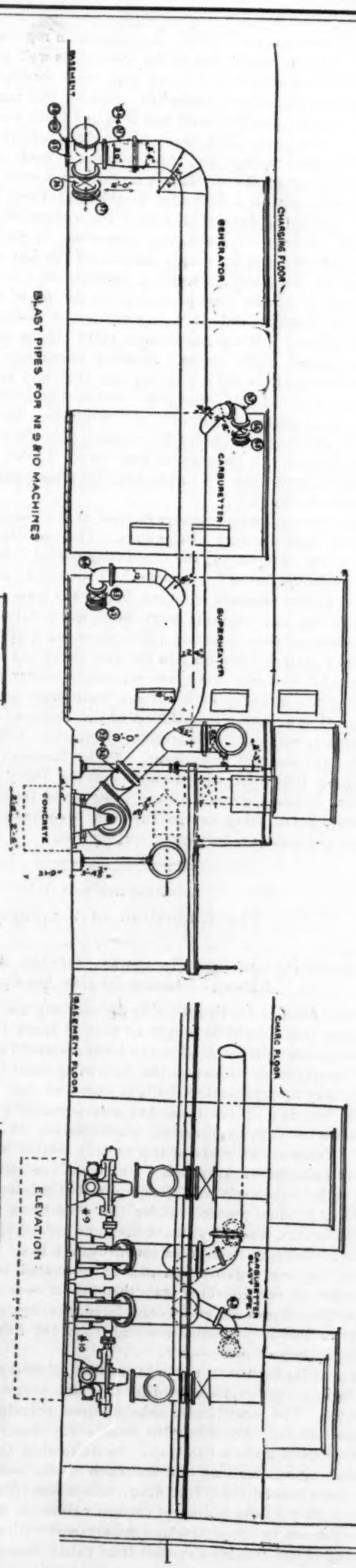

BASEMENT
CHARGING FLOOR
GENERATOR
CARBURETTER
SUPERHEATER
BLAST PIPES FOR Nº 5 & 6 MACHINES
ELEVATION


BASEMENT
CHARGING FLOOR
GENERATOR
CARBURETTER
SUPERHEATER
BLAST PIPES FOR Nº 7 & 8 MACHINES
BASEMENT FLOOR
CHARG FLOOR
ELEVATION


BASEMENT
CHARGING FLOOR
GENERATOR
CARBURETTER
SUPERHEATER
BLAST PIPES FOR Nº 9 & 10 MACHINES
BASEMENT FLOOR
CHARG FLOOR
ELEVATION

a quick opening gate valve. In addition, a regular throttle valve is installed in the steam line at the turbine, as well as an exhaust valve at the turbine exhaust. In this way each machine may be isolated in case any repairs are desired to be made. The turbines and blowers are mounted upon the same cast iron bed plate, and are connected by flexible couplings. The blowers are of the multivane type, enclosed in sheet steel casings, and the discharge in each case is 45° upward. The governor of the turbine is directly mounted on the end of the shaft, and acts on a balanced double-seat Terry governor throttle. Each turbine is furnished with 4 jets controlled by hand operated valves. Fractional loads may, therefore, be carried at practically full load efficiency by simply cutting off the jets as desired.

One of the many interesting features of this installation is the carrying of all the blast piping on the ceiling of the room. In this way the common and rapid depreciation of underground piping will be eliminated. Even galvanized plate piping deteriorates quickly when placed under floors. Another advantage of the location of blast piping at the ceiling is the fact that any air leakages may be readily detected and remedied. When the blast piping is underground, of course, on account of deterioration leakages are more frequent and they are harder to repair. The Peoples Gas Light and Coke Company in its practice has found it more desirable to allow sufficient head room for suspending the piping than to place the same beneath the floors.

The average steam pressure carried at the plant is 110 lbs., and the average back pressure 3 lbs. gauge. The operations of the gas machines are interesting, the "blowing period" being 4 minutes, and the "making period" 4 minutes. It should be noted that, with the use of a blast pressure of 30 ins. W.G., the time for blowing periods for this size gas machine have been materially shortened over the older low pressure practice. This shortening of the blowing period effects a material economy in the amount of the steam used for driving the blower sets, and gives relatively longer making periods, resulting in a larger quantity of gas being made per hour.

This North Station installation of the Peoples Gas Light and Coke Company, was put in operation, September, 1912, since which date there have been no shutdowns. At the Division street plant of this Company it is interesting to note that the Terry turbine blower sets furnish exhaust against a back pressure of from 3 to 5 pounds, the exhaust steam being carried through superheaters under the grates of the gas machines for use in making gas.

[Continued from page 116]

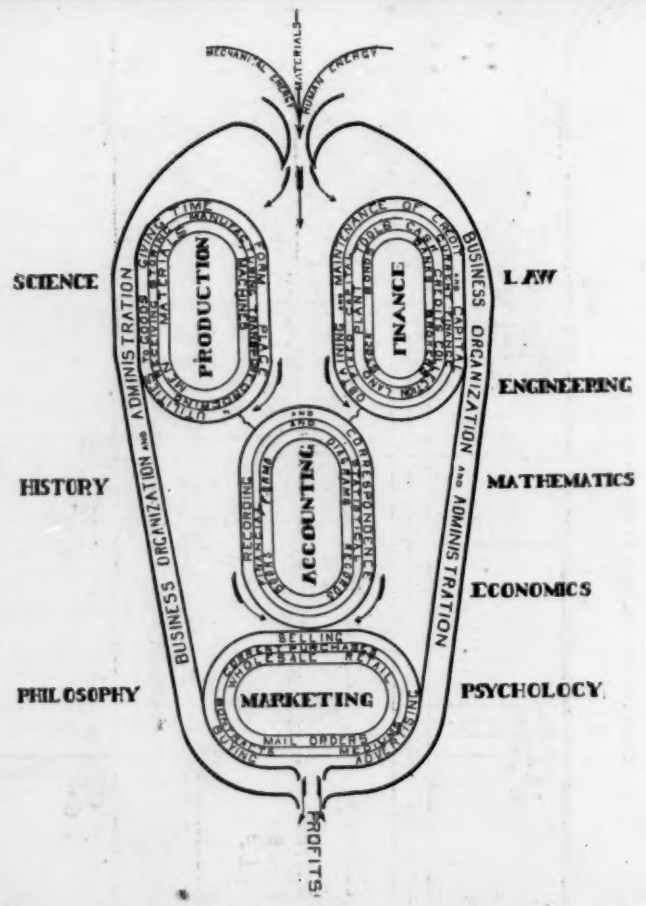
The Education of Employees.

[Prepared by Dr. Lee Galloway, for the Eighth Convention, National Commercial Gas Association.]

What Should Be Taught.—So far nothing has been said about the subjects that should be taught or how to teach them. To show that there is sufficient material in the business world to constitute the subject matter of an education the following chart has been prepared.

By way of explanation, let it be observed that the student of business does not ignore those subjects pertaining to science, history, philosophy, law, engineering, mathematics, economics, psychology, etc. These are all more or less closely related and interwoven with every business organization. But from our point of view they are not ends in themselves. The corporation is interested in turning out the best product possible under the conditions imposed upon it by manufacture, financing, marketing and recording the results. These four fundamental activities constitute the basic functions into which every business organization can be separated, but when the infinite number of relationships, subdivisions of operations, employments, departments and duties are considered, the organization of a company offers a field for investigation and study not inferior to that of science, history or philosophy.

Yet at the bottom of the organization of every business there are underlying principles according to which every business structure is erected. The most fundamental of these principles is that of functionalization. According to this, every department, activity and duty depend upon a function. By following the principle of functional organization we find that each of the four basic activities of a business is subdivided into many minor activities. Thus production has as its goal the adding of certain values or utilities to the goods. One process in the production department will store the goods, thus giving to the articles a certain time value, because they are ready to



be had when most wanted. Another department will give the articles the correct form or shape, and another department will see that the goods are put in the right place at the right time. In fulfilling these functions of the production department a number of minor departments are necessary, hence the ordering, receiving, storing, manufacturing and transportation within the plant. And, of course, there are the means by which these things are accomplished—the men, material and machines.

The financial activities have for their purpose the obtaining and maintenance of the credit and capital. These are divided into fixed capital and current finances. The fixed capital may be designated by land, plants and tools, and the current finances by cash, credits and collections. Finally, these are represented by stocks and bonds, book accounts and notes. The means by which these activities are carried out are the banks, trust companies, brokerage agents, etc.

The accounting department embraces the chief function of recording the financial and statistical data of the company. This is done by means of books, forms, diagrams and reports. It will be noticed further that the accounting touches every department.

The marketing activities of a concern may be divided into three sections—buying, advertising and selling. These may be further divided into current transactions or long-time contracts. The means by which these activities are given expression are the wholesale, retail or mail order, and, in the case of advertising, the mediums of publicity, such as the newspaper, bill boards, booklets, etc.

Surrounding these prime functions of a business is the all inclusive science of organization and administration. Its function is to keep the whole enterprise upright, and to guide the combination of the various forms of mechanical, material and human energy, as seen at the top of the chart, into the final result, the ultimate goal, indicated by the last item at the bottom—the *profits*. With this bare outline of business functions before us we see the possibilities of grouping the information and principles necessary to the operation of a modern business into suitable schemes for purposes of study and education. In order that we may see how this may be done on a large scale, let us examine a curriculum which has gone farthest in the development of a higher business education.

It will not be advisable to go into a discussion of this chart. It was presented to show how well the field of business is being broken up that it may be the better studied by men who by no possible means could grasp all the principles through experience alone. Many larger corporations are, therefore, finding it necessary to instruct their employees in the organization of their industry, in the functions of the

various departments and in the public policies of the corporation. To do this they select the special business activities which pertain to their particular business, and educate the office men, their salesmen or their shop employees, as the case may be, in the principles of those special branches. A bond investment house, one of the largest in New York, has selected its educational courses primarily from the field of financial organization. It requires its employees to study corporation finance, foreign exchange, the money market, theory of investments and analysis of current security flotations, speculation and the stock market. In addition to these practical subjects they further require their men to pass an examination on political economy, money and credit and the principles of salesmanship. At the same time the employee is instructed in the procedure pertaining to the methods of the house itself. A large New York banking concern has selected a somewhat different course of study. This institution requires its men to take a regular course made up of the more elementary technical studies, such as business correspondence, French, German, Spanish, penmanship, commercial arithmetic and bookkeeping. This course is given the first year and then a more advanced course is outlined for the more ambitious and capable men. The course contemplates the study of subjects selected from the fields of political economy, corporation finance and business organization.

The educational features of the big electric companies are so well known that little reference need be made to them, except perhaps to show the recent emphasis that is given to the instruction of the office force of those companies manufacturing electric appliances. The object is to train men in the art of illumination and salesmanship. The men are, therefore, given training in the principles of these subjects, but such additional instruction is given in electrical engineering, central station practice, lamp manufacture, etc., as may be necessary.

It will be of more interest to gas men, however, to examine the educational programme of a large central station electric company. Besides the technical courses in electricity which have been running for the past 6 years, one company has instituted courses for its clerical employees and sales' force. The clerical employees are given a year's instruction based upon the accounting practice of the company. The course includes lectures on the work of the other departments, which amounts to a course in business organization, with the object of acquainting those employees with the technical and commercial activities of the company. The course is divided into four principal parts; *i. e.*, theory of accounts, local practice, general and public policy and descriptive lectures.

The commercial courses prepared especially for the salesmen have been carefully worked out. The salesmanship problems of the central station are much different from those of the manufacturing concern. More responsibility rests upon them. Like the representatives of the gas companies they help form public opinion regarding the corporation.

This instruction as laid out covers 2 years. It embraces an elementary and advanced course of study. Both the method and the purpose show that the company is attempting to do real educational work. Not only must the employees take this werk, but they must work out answers to questions covering the lessons of each month. This method, of course, requires an educational manager and staff instructor.

To make the first year's work effective the instruction is grouped about three central ideas: (a) The elements of central station business getting; (b), fundamental principles of electricity; (c), basic principles of individual efficiency. Accordingly the lessons on selling and efficiency are alternated with lessons pertaining to the technical features of the business.

Since the problems of service to the public are much the same in public corporations it may be well to give a list of those lesson topics which have been successes as proved by this company to its satisfaction. Starting with a lesson on "The Value of Right Thinking," the course continues as follows: "Soliciting the Lighting Business," "Courtesy," "Soliciting Power Business," "The Test of Efficiency," "Education—What to Learn," "Six Steps in Salesmanship," "Basic Element of Business Correspondence," "The Power of Confidence," "Self-Development," "The Business Lecture."

The interest in such a course lies not so much in the pedagogical arrangement, nor its logical development, but in the attempt to get the salesman to analyze his methods, his manners and his habits of life. Of course, the technical lectures which run parallel with the others give the men an understanding of the product and the arguments in favor of its purchase by the customer.

The second year's lesson continues the general line of development started in Course I., but is divided into three parts. Hygiene, health, recreation and elements of psychology are taught during the first half of the year. This is called Course II. The second half of the year is given over to the instruction of the men in the "Basic Principles of Salesmanship and Their Relation to Business Building." This constitutes Course III., and in it is developed the attitude which a public service corporation should take toward the community it serves. Among the subjects so taught are "Public Service and the Public," "Goodwill in Public Utilities," "What Constitutes Individual Efficiency," "Municipal Ownership and Operation of Public Utilities," "Keeping Pace with the Public."

A fourth course puts the employees into possession of the "Policies and Organization of the Company." Each department is discussed in relationship to every other. Such topics as "The Company's Methods of Handling Complaints," "Organization and Scope of the Contract and Inspection Department," "Relation of the Auditor to Contracts and Credits," etc., etc., are presented to the students, and they are expected to pass written examinations upon them.

As was stated above, the direction of such a course is in the hands of two men who devote most of their time to educational work. Many of the first year's lessons are presented by these two men. The more advanced courses are given by successful heads of departments in the company and by experts in their various lines from the outside. Many of these men are of nation-wide reputation.

No attempt has been made to give the outline of this company's educational work in detail. It would require a paper itself. Suffice it to say that the company spent $10,000 last year for its educational courses on the commercial side alone. Although this is a large outlay, the company is planning to extend its work next season. From every point of view the work has been considered a success, but not least among the many gains made is the role which the educational scheme is serving as a basis for the selection of employees for promotion.

The examples given above of education of employees by various firms illustrate what might be called the intensive method of education. All these companies have paid instructors as class leaders. The class work in one case is supplemented by lectures furnished by a correspondence school, while another company helps out its regular instruction by calling in outside lecturers.

There is, however, another method which is gaining in force. By this method all (or many) of the companies within a given industry combine to carry out a uniform system of instruction for the employees throughout the industry. This instruction may consist of lectures and problems bearing upon the technical work of the manufacturing processes or of lectures and problems bearing upon the commercial and new business departments of the industry. Such a method requires that part of the instruction be done by correspondence. There are many advantages and some drawbacks to a correspondence course. The employee who receives printed lectures, studies them conscientiously and then writes out the answers to certain questions accompanying the text is gaining a power of independent thought which the school attendant seldom gets. And it is just this power, by-the-way, which makes for initiative in the employee—a quality very much in demand by every company. On the other hand, the correspondence student loses the personal contact and explanation which a class instructor furnishes. This objection has been met by supplementing the lessons by correspondence with a class leader furnished by the local company. Such a leader, coming as he does from the same company, brings not only a broader comprehension of the lectures than the average employee would have; but, knowing the local conditions of the work, he can give valuable advice when practical difficulties are met by the men.

When these lectures are prepared through the co-operation of leading authorities in the industry from every section of the country, a comprehensiveness is given to them that is lacking in the educational schemes of an individual corporation working alone. Furthermore, if the papers of the students are carefully examined by a competent and impartial central authority, there is an incentive for the employees to work and opportunity for them and their companies to compare the efficiency, in one respect at least, of the various companies throughout the industry.

Nearly all of the large national industrial and commercial associations of the country are agitating the question of promoting the education of employees. Among those which have only recently made special reports upon the subject are the National Association of Pub-

(*Continued on page* 130.)

THE AMERICAN GAS LIGHT JOURNAL

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NEW YORK, MONDAY, FEBRUARY 24, 1913.

[Official Notice.]

Annual Meeting, Indiana Gas Association.

Office of the Secretary,
Indianapolis, Ind., Feb. 15th, 1913.

The Annual Meeting of the Indiana Gas Association will be held at the Claypool Hotel, Indianapolis, Wednesday, March 12th, and Thursday, March 13, 1913. The sessions will begin promptly each day at 10 A.M. The afternoon of Wednesday, March 12th, the members of the Association will go in a body to the Exhibit of Industrial Gas Appliance in the Indianapolis Gas Company's display room, 37 South Pennsylvania street, leaving the Claypool Hotel promptly at 1:45 P.M. The list of papers to be contributed and discussed is as follows:

"Workmen's Compensation," by Mr. O. O. Thwing.
"Benefits of Gas to the Public," by Mr. A. S. Cooke.
"Motor Trucks," by Mr. G. M. Dolley.
A paper by Prof. Frank Mathers, of Indiana University.

The Bureau of Information will present its report, including the correspondence which has been received and dealt with during the year.

At 6:30 on the evening of Wednesday, March 12th, there will be an informal dinner (no dress suits) at the Claypool Hotel.

Respectfully, Philmer Eves,
Secretary-Treasurer.

[Special Editorial Correspondence.]

FORTY-THIRD MEETING, NEW ENGLAND ASSOCIATION OF GAS ENGINEERS.

Young's Hotel, Boston, Mass., Feb. 19, 1913.

Much pleasure (perhaps more often the reverse) may be gained by comparisons, despite the adage that all such are odious. However, adage or not, he would indeed be a forgetful one who, having attended the second coming-of-age meeting of the New England Association of Gas Engineers, the memorable February of last year, failed to recall the then climatic terms. Still in the icebound thrall of a winter season that broke all records for continued, persistent, dominating temperatures on the low side, the delegates last year shivered, and feared while they shivered. During February, 1912, the gangs on main repairs and stopped services slept in their working apparel, right alongside the emergency wagons, ready to be sent out along any line length in the territory; and by day (so remarked within hearing of your scribe) the street men were frequently directed to their most appealing work, through noticing pavements rising above their proper levels, "because another break in the pipes," was suddenly heralded. Possibly that is overdrawing it a bit; but say what one may respecting it the situation was dismally desperate. But today; well it may be truthfully written down that it was a typically beautiful New England winter one. Mayhap a trifle more of snow would have added reality to the historic winter day of staid, old New England; but, truth to tell, I imagine the fleecy garber's absence was rather more enjoyed than deplored.

Considerably over 150 delegates responded to Secretary Gifford's appeal for membership presence, succeeding President Dana D. Barnum's call to order, the gavel fell for which at 10 this morning. And how well the Worcester man looked as he stood at attention over the President's desk. Truly, he is a scholar without pedantry; a director whose guiding needs no lash; an engineer whose receptive mind is open to argument, even after a belief has been fairly well found; and blessed over all with a personality regarding which lasting friendship may not be denied. And right here I am impelled to keep just another moment to the forefront on personal account. Secy.-Treas. Gifford, and this may brook no fair denial, has in some happy manner halted time, in so far as time makes (rather, fails to make), personal mark. To every appearance he is as young as when he was "called" to East Boston; and that trust has reposed in him now quite some time. One very close to him, however, furnished a possible explanation of why youth remains with "Nat.," as his familiars best know him. He grows young again with his family, which happy possession of his includes two "strapping" New England youths that are in their Senior Year in America's great school known to the world as "Harvard." Well, one of them has done so well that, when his Harvard days are over—which ending will come to pass this year—he will journey to England's greatest Alma Mater, Oxford, there to take up the famous Rhodes' Scholarship, which prize was won by him over many zealous competitors. No wonder then is it that the spirit of all the Giffords should be proud.

But, to come back to things material in connection with the session. The report of the Board of Directors, in so far as the changes in membership are concerned, chronicled 12 applications (9 Active, 3 Associate), and the subsequent adding, by election, of these to the roll, brings the latter to the imposing total of 239. Vice-President Hintze assumed the Chair while President Barnum read the annual message. The President was content to in quiet way recount the activities of the twelvemonth, as these were shown in the New England field for the period. Of course, the burning question of the present (the great increase in the price of oil enrichers) came in for mention. And in this respect it is worthy of note that gas oil users the country over are not inclined in any sense to declaim against the oil producers and the oil controllers. All seem fairly agreed that the increases are matters of "must," not of choice, in that while the demands, through the wonderful expansion of the gas making industry, have increased enormously, the oil output has not kept pace therewith. Again, the trouble is not alone confined to the matter of quantities, but is also largely concerned with quality. Bluntly, here is the dilemma—decreases in production and usefulness. The address having been referred in the usual order, next came the note of sadness that strikes the spirit of all. The reports on deceased members were all too many. Three of the tried and true had been summoned from earth, each of whom was well loved by his intimates, and held in good esteem by his fellows. The fateful listing bore the names of: Col. Frank S. Richardson, of North Adams, Past-President of the Association, and ex-Adjutant General of Massachusetts. Honored by his State, city and township, beloved of his fellows, Col. Frank's memory will sweetly survive while any of his contemporaries are in the flesh. Of Mr. E. H. Yorke, of Portland, Me., also a man whom his fellows liked and honored, whose membership in the Association dates back to its earliest times, and to and for which body his best thought was freely given. Of H. F. Coggeshall, of Fitchburg, Mass., whose name is indissolubly connected with the betterment of the city that he served in several capacities long, faithfully and well. Of Mr. E. C. Learned, and of Mr. S. M. Cogan. Respecting the latter it may be truthfully said that their loyalty to the Association and their earnest belief in its worth to the fraternity on professional and personal accounts, was not exceeded by any who had been more lengthily or prominently connected with it. The beautiful tributes to their worth as presented by the Committee will silently appeal to those who, in later days, may happen to scan them. The reports of the Treasurer and Secretary furnish indisputable evidence that the "Mother Association" was neither niggardly in respect of keeping the affairs of the Association in proper way and order, nor extravagant or forgetful that a surplus was not a burdensome thing to carry. Many letters, regretting the inability of the writers to share in person the good things of the session, were read. These included one from that glorious Dean of the fraternity, Mr. Frederic Egner, who from his Washington headquarters had also forwarded a donation of books for the shelves of the Association's fast increasing library. Mr. A. B. Slater was another who remembered the Association in similar respect. Both were awarded votes of appropriate thanks for their remembrances. At this juncture an invitation was received from the Pacific Coast Gas Association to have the New Englanders unite with them in a joint Gas Congress in 1915. While the formal invitation to the body was declined, nevertheless Mr. C. H. Nettleton (New Haven) was elected a delegate to qualify as a member of the Committee to arrange for the Gas Congress in San Francisco during the year named. The severe illness of that dearest of New England's gas men (Mr. John A. Coffin) was fraternally noticed; and it was voted to appoint Mr. W. A. Learned a special ambassador to convey to Mr. Coffin the joy the Association had in knowing that the crisis had happily passed, and to assure him of their heartiest good wishes. On behalf of the Nominating Commit-

tee (Mr. W. G. Africa, Chairman) the names of the following were reported as office bearers for the Association's Forty-fourth year—it is needless, of course, to say that they were unanimously chosen:

For President.—T. H. Hintze, Providence, R. I.
" *First Vice-President.*—C. A. Learned, Meriden, Conn.
" *Second Vice-President.*—H. K. Morrison, Brockton, Mass.
" *Treas. and Secy.*—N. W. Gifford, East Boston.
" *Directors.*—J. F. Wing, H. C. Crafts, A. M. Barnes, J. A. Norcross.

The President now introduced Prof. A. F. Ganz, of the Stevens Institute of Technology, who, submitting the text of his paper on "Electrolysis," in the remark that he would not, because of its length, read it *verbatim*, in the knowledge that it would subsequently appear *literatim* in the "Proceedings," then delivered a lecture on the subject that absolutely held to tension the minds of his hearers. It was beautifully punctuated and illustrated through the agency of 20 lantern slides, so capably handled that the text and pictures were virtually corelated. The lecture took 1¼ hours to deliver, and on its termination the Professor was greeted with a volume of applause the like of which is seldom heard, even in such a speechmaking place as Young's. And, again, the perturbed air moved uneasily when President Barnum announced that the Association had unanimously awarded the Professor a standing vote of thanks. An animated discussion fittingly wound up the mornings' proceedings.

The afternoon session was commenced promptly at 2:30, and the first number to engage attention was the paper on "Accounting," by Mr. A. R. Patterson. The author is evidently a master along this line, and it is likely he has put himself in a fair way for considerable out-of-town correspondence when his paper shall have appeared in print. Next came a paper by Mr. E. F. Wilson, whose clever treatment of the evidently timely topic, "Notes on Chemistry of Gas Coal," was pretty cleverly discussed. The Secretary closed the session by presenting a few queisions from the Question-Box. And it did seem passing strange that no one present looked in any sense appealed to by queries propounded. However, the "propounders" were not even present in person. There is present Mr. Woodall, of the celebrated firm of Woodall-Duckham, of England, whose carbonizing practices, and apparatus connected therewith, are attracting world-wide attention. He certainly has the knack of making friends, and his *fides achates*, Mr. John De Hart, the clever engineer connected with the old American house of the Isbell-Porter Company, may be counted on to see to it that Mr. Woodall sees about all there is to be seen.

THE BANQUET.—Over 200 joined in the dinner at Young's, which was beautifully served, and thoroughly enjoyed. I may say that no dolls were distributed to the diners, but the edibles were in plenty and variety, and towards those the *chef* had done his best. The speakers were the incoming President, Mr. T. H. Hintze, and right well did "Tom.;" Hon. R. M. Washburn, Massachusetts legislative member, from Worcester, who managed to bring out something other than a platitude series, despite the fact that his topic virtually was on allowing the people to rule—which happening would be all in favor of very cheap gas. He was followed by Mr. A. M. Duckham, of the Woodall-Duckham Company, England. He certainly is his father's son, and his speech along the lines of good fellowship was witty and worth while. He surely was accorded a rousing recepsion. The speechmaking was brought to a close in a series of paragraphs recited in good style by Mr. J. W. Ellis, whose occassional lapse into preoccupation was accounted for by the fact that his other self (the only Carroll Miller) was in foreign lands.—W. C.

NOON, YOUNG'S, Feb. 20, 1913.

The final session was commenced at 10 this A.M., the concomitants being glorious weather, large attendance, and unabated interest. An unlooked for happening came to hand in the shape of an exceptionally well-prepared paper, by Mr. C. H. Nettleton, who in his usual clear cut, concise, way detailed "Some Notes on Vertical Retorts at Derby." The paper gave rise to a good discussion. Kindred in thought, remembering its connection with the carbonization of coal, was the paper by Mr. R. B. Brown. Those who know that observantly progressive gentleman know that he never does things in fractions, and his presentation of the subject of "Coal Gas" abounded in plain facts plainly put. The final number of the session and of the meeting was the paper by Mr. B. F. Pierce, and its paragraphs go abundantly to show that gas, as an illuminating agent of the first rank, can readily hold its own with other types in the illuminating field, the history of which is somewhat shorter—W. C.

CURRENT MENTION—

SOME days ago a charter was issued to Messrs. W. C. Miller, L. D. Kaufman and W. H. Joyce, of Harrisburg, and Mr. George C. Cohenour, of Camp Hill, Pa., under which they will construct this spring a plant to supply gas to the residents of Williamstown, Lykens and Wiconsico, Pa. The works will be located in Williamstown.

"GEORGE H. GALL," a prominent writer on the staff of a prominent Washington (D. C.) newspaper, recently declared: "The conclusion of the long fight in the Washington Gas Light Company has been reached. Joseph Leiter, re-elected to the Presidency by the new Board of Directors, is to resign shortly and Vice-President Howard Reeside will be elected to the first office, according to reliable information."

ACCORDING to recent advices from Americus, Ga., to effect the complete rehabilitation of the Americus Gas and Electric Company, its affairs have been placed in the hands of Mr. Charles Council, as Receiver, appointed by direction of Judge Z. A. Littlejohn, at the instance of the New York Guaranty Trust Company. The proceedings, which are altogether friendly, will result in the taking over of the plant for operation by the bondholders. There is no local indebtedness of any sort, and the business of the Company will not be in any sense interrupted.

SUPERINTENDENT F. K. WADE, of the United Electric Light and Water Company, of Norwalk, Conn., declares that the Company's old coal gas plant will be put into commission as soon as the repairs necessary to put it in serviceable condition can be completed. Our informant also declares that, "Repairing the old coal gas plant at Norwalk virtually means the reconstruction thereof."

ADVICES from Haverhill, Mass., under date of the 14th, are to this effect: "Haverhill may get 80-cent gas, but the consumers will have to pay 85 cents per 1,000 cubic feet for some time, Judges Dodge, Brown and Morton, of the U. S. District Court having handed down an opinion in the injunction proceedings brought by the Haverhill Gas Light Company against the Massachusetts Board of Gas and Electric Light Commissioners, and Attorney-General J. M. Swift, whereby the State authorities will be restrained from compelling the Haverhill Company to reduce its rate to 80 cents from 85 cents. The order is in temporary restraint, and sets forth that the Company shall charge 85 cents pending final determination of the suit, but it shall deposit with Clerk Darling, of the U. S. District Court, all the money collected from consumers in excess of the 80-cent rate, together with a sworn affidavit showing in detail names and addresses of the consumers and the sum they pay. The Company is allowed 10 days to file answer, and if it agrees to the findings (which it undoubtedly will) the Commissioners and Attorney-General Swift will be enjoined in any way from enforcing the 80-cent rate. The excess money will be returned to the consumers, or *vice versa*, as the case is finally settled."

MANAGER LEONARD (of the Milford, Mass., Gas Light Company and the Milford Electric Light and Power Company) is arranging for another display of gas and electric lighting devices, specialties, etc. His last effort along these lines was so successful that it is possible the office premises will not be large enough to afford space sufficient for the exhibition on the scale proposed. In such event we imagine Manager Leonard and his associates will not debate at much length over the desirability of "hiring a hall" or other outside point of vantage wherein to bring the affair off properly.

MR. CHARLES BARKER, Treasurer of the Milford (Del.) Public Light and Water Commission, in his report of the doings of his triple sided department of public works for the year ended December 31, 1912, shows that the lighting division was operated at a profit of $4,825.23.

AT the annual meeting of the shareholders in the Augusta (Ga.) Gas Light Company, the reports showed a very satisfactory condition of affairs. The annual election resulted in the reappointment of the former executives.

ON the 13th inst., in the Massachusetts Legislature, an adverse report was received in the Senate Chamber from the Committee on Public Lighting, respecting the petition of certain Quincy residents for an order directing a reduction in the selling rates charged by the Quincy Company. A like report was also submitted regarding the bill which provided substantially that where a person or firm used, in 1 year, gas or electric currents amounting in billing value to $7, no charge on meter rentals' account should be made.

SOME days ago there was filed with the Secretary of State, of Indiana, articles incorporating the La Porte (Ind.) Gas and Electric Company for the purpose of supplying La Porte and other towns and villages "and places of amusement" with water, light, heat and power. The concern is capitalized in $1,000,000, and its incorporators are W. A. Martin, Chas. M. Cook and Ed. F. Michael, of La Porte, and C. M. Hurd and B. C. Robinson, of Grand Rapids.

THE Peoples Gas, Light and Power Company, of Oacoma and Chamberlain, So. Dak., has been incorporated to furnish the named places with light and power. The incorporators are Messrs. P. B. Dirks, W. R. Tapper, Henry McGrath and Geo. M. Kennedy—all residents of Tacoma, Wash.—and the concern is capitalized in the sum of $25,000.

Book Reviews.

"*Competition Points for Gas Salesmen*," by A. F. Beyant, published by Walter King, London; 225 pages; Price $2.

The author appears to have brought together in orderly arrangement, such information as would be of use to the gas salesman in these days of keen business getting. The gas salesman of to-day has to meet the arguments of his competitors, so he must be well acquainted, not only with the efficiencies of the appliances he has to offer, but also be alive to those of his competitors. This book furnishes many "points" helpful to gas salesmen in all divisions.

(*Continued from page* 127.)

lic Accountants, the National Manufacturers' Association, the National Metal Trades Association, the National Electric Light Association and the American Institute of Bankers. All of these organizations are actively at work. The influence which these great national bodies are wielding in the educational field is tremendous. For example, the American Institute of Bankers has a membership of 12,000 men engaged in the business of banking. Its purpose is the education of bankers in banking and the establishment and maintenance of a recognized standard of education by means of official examinations and the issuance of certificates of graduation. Many employees of country banks are enrolled as correspondence students. In suitable cities bank employees are organized in chapters for educational work in accordance with the class methods of instruction. Elsewhere the correspondence system is employed.

Each of the great societies mentioned above has some different public policy to promote through the education of its employees. Thus the bankers wish "to banish the popular inertia and indifference" toward the reform of the currency and financial laws; and the metal trades expect from the education of their employees "to make for industrial peace," since "the mechanic will be able to appreciate some of the difficulties of the manufacturer."

The recognition of the employees' influence in molding public opinion is one of the most significant features in the corporation's efforts to educate their men. If ignorance has blinded the public to the rights of the big corporations, to say nothing of their lack of appreciation of the great difficulties which these corporations have encountered and successfully overcome, much to the advantage of society, it is high time that the masters of industry teach their employees—the men who come into closest contact with the public—and so relieve at least one half of a situation where "the blind are attempting to lead the blind,"

This suggests that there is an opportunity for the gas companies of America to do a great work. A selling campaign which would return high immediate profits to the company, and at the same time win the market for all future time, would be considered a masterpiece. Yet the education of the gas employees of the country would have an effect not unlike this. A manager of a new business department needs not be told that his salesmen will bring in more orders if they are well informed as to their product, their selling data and their customers; but, in addition to this, is the gaining of the public's favorable opinion, not only by being represented by intelligent and gentlemanly men, but through the public recognition of the company's effort to carry out a broad policy of education. There is no other point on which the American people are more enthusiastic than that of education. If it were generally known that the gas companies of the United States were carrying out a system of education, whereby not only the employees would be materially helped, but the public better served, the question of a national advertising campaign for the benefit of gas industries would be in a large measure solved.

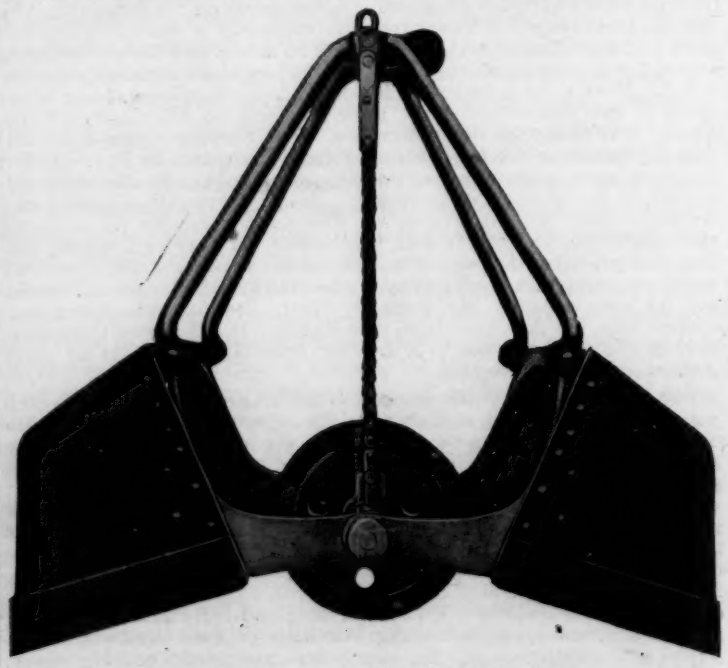
Think what it would mean if the people of the country were made to feel that the gas companies were spending thousands of dollars to find means to serve them better. There was never a greater opportunity offered a national association than that which lies at the door of the National Commercial Gas Association. This Association is in a better position to undertake the work of educating its employees than any other. It represents an industry in which there is little or no competition between its members. The great objection offered by the manufacturers of electrical supplies, engineering concerns, etc., is that the employee no sooner becomes a valuable man through their system of education than he leaves them to enter the shop of a competitor. A gas employee, on the other hand, who was educated in Detroit would not only be equally efficient in Atlanta, but his influence for good in helping forward a favorable public opinion would be still at work. And although Detroit would have lost a good man it would not feel that he had entered the ranks of a competitor.

And while we have talked in broad terms of nation-wide significance, the means to be adopted would be very simple. An elementary course of 10 or 12 lectures, worked out by experienced technical men, covering the principles of manufacture and distribution, might be called Course I. A second course covering the art of salesmanship might follow. This course, while primarily for the new business men, might well be taken by all the other employees. For in the last analysis every man is a seller for his services. A third course of 10 or 12 lectures would embrace a study of the organization and policies of gas companies.

To my mind the gas industry of this country is at the right stage of development to begin this work. A few years ago an attempt to carry out a scheme of education would have failed. The organization and methods of the companies were such that it was difficult to hold men in the business. But the enlightened policies which now govern most companies in regard to industrial betterment, welfare work, wage policies and pension systems have created an *attractive force* which can now be supplemented by the *cohesive force* of "a conscience which recognizes obligation," developed through the company's educational efforts.

The Haiss Type of Clam Shell Buckets.

The illustration shows an open view of the Haiss clam shell type of bucket, listed under the title of "Contractor." To begin with, this bucket offers the attraction of low first cost, which important consideration is backed up by great economy in continuous operation. The "Contractor" type is built to handle every class of loose nature bulky materials; and, when fitted with teeth, can really and effectively act as excavators. The material of which the Haiss bucket is built is of fine steel, and the bucket is bushed throughout with phosphor-bronze material. Four connecting rods work from one shaft to the connection in the head, a plan which permits the bucket



Haiss "Contractor" Clam Shell Bucket—Open View.

to hang centrally under all conditions. The steel cutting shoes, which form the outer edge, extend from the top of the bowl on one side to a like extension on the other side. The link side-chains give the bucket equal closing power from start to finish of the closing of an operation. A very important feature of this bucket is its capacity when working in wet material. The shells are high all round giving them like capacity in all sorts of stuffs. The construction insures satisfactory work of a lasting type in all sorts of service. All parts, being interchanageable, they can be readily replaced when the necessity for such is in evidence.

Some Notes on Charging and Discharging Machines for Retorts.

[From a paper read by Mr. W. L. Heald, of Preston, England, before the Manchester and District Junior Gas Association.]

The author began by remarking that retort charging and coke drawing machines of the power type, like many other pieces of plant for use on gas works, have had very material influence on the production of gas. Fifteen years ago, and probably later than that, works with less producing capacity than 400 million cubic feet per annum were, in this country, not even considering their adoption; whereas at the present time works with makes as low as 45 million feet per annum are successfully operating them. After paying a

tribute to the work of Mr. John West and the late Mr. W. Foulis, he went on to say that remuneration for labor has reached such a pitch that everybody must, from a financial standpoint, consider the ways and means of doing with as little as possible, consistent with safe and reliable working; and naturally they would look first at the most expensive labor, which in all works is in the retort house. From a humanitarian view also, he added, the adoption of machines is advisable. After pointing out that the use of machines which work at each side of the bench, as against those which work at one side only doing the same amount of work, is hardly worth any consideration—the advantages of the single-sided machines being self-evident—Mr. Heald proceeded to shortly describe (with the aid of drawings) various types of machines which are now before the gas profession—namely, the West, the Fiddes-Aldridge, the Dempster (Elland), the Drake, the De Brouwer, the Arrol-Foulis (Hunter-Barnett), and the Guest-Gibbons. He stated that the last named is the newest machine on the market, and described it in the following terms.

The Guest Gibbons Discharger-Charger.—The Guest-Gibbons is not a simultaneous machine, but still only one step removed from this type. The ram first discharges the coke from the retort, returns to the body of the machine, and then, after an alteration of parts connected with it, is ready to push coal into the retort. There are three important parts constituting the pusher: (1) The main body of the pusher, consisting of two long slotted side plates; (2) the charger-carriage with a pusher head, and (3), the drag bars consisting of two parallel bars with ears attached on the outer side.

When the pusher is to discharge coke, the charger carriage - about 4 feet long—is in such a position that its back end is pivoted at the front end of the main body of the pusher, and is held there by two stops. The drag bars are resting on the carriage. When the coke has been pushed out, and the parts have returned to the machine frame, the pusher is converted so as to charge the retort wilh coal. By reversing the two stops, and giving the pusher a forward movement, the main body of the pusher passes within the charging carriage—the stops holding it there. The main pusher and the carriage are then drawn back to the original resting position; and by a very slight forward movement of the push bar—a rod at the back end of the main pusher body—the drag bars are let down level with the floor of the retort. The drag bars are attached at one end to the pusher head by a lever; the front end having fixed to it the chain, which, passing over a pulley at the end of a bar or tube lying immediately above the drag bars, is fastened to the push bar. The push bar is the head of a heavy sectioned chain, which, passing under a sprocket wheel in gear with a motor, gives movement to the pusher, and has a pin through it which works in a slot at the back end of the main pusher. It is this movement in the slot that raises and lowers the drag bars.

To charge the retort with coal, the carriage has the pusher within it, the drag bars lying in a trough of slightly less section than the retort, and having been pushed forward to form the connecting piece between the machine and the retort mouthpiece. So much coal is then allowed to fall in the trough and among the drag bars in front of the pusher carriage head as will fill one third of the retort. It is pushed into the retort to any predetermined position. On the commencement of the return stroke, the drag bars are automatically lifted above the coal, and the whole returns to the body of the machine preparatory to putting in a second or third lot of coal. The object of the drag bars is to hold the coal together during the journey into the retort, and to make a gasway over the coal on the return stroke of the pusher. An indicator on the machine shows the driver where to stop the pusher, whether he is putting the first, second or third lot of coal into the retort.

The remaining portion of the paper is given in full.

The Choice of a Machine.—Let us now consider the seven machines in types. We may say there are three; and let us group them as "A," "B," and "C"—"A," West and Fiddes-Aldridge; "B," De Brouwer, Drake, and Dempster; "C," Guest.Gibbons and Arrol-Foulis.

The fact that all these machines are on the market and being purchased, proves that there is merit in each, but that some are more suitable to one works than another. Place yourself in the position of a buyer for a short time. The first question to be asked is, What do you want a machine to do? If you require to put a moderate charge into a retort with plenty of gasway over it, a machine of either the "A," "B," or "C" type will do; but if you need heavy charges with only a small but sufficient gasway, your choice is limited. In the "A" type, the coal is carried or pushed into the retort. The carrier occupies room, and the necessary clearance for it is also a large section. When the carrier is withdrawn, the volume occupied by it and the clearance fills up with coal, and, therefore, a large gasway is left. In the "B" type, nothing but coal enters the retort while it is being charged; and the whole space can, therefore, be filled. To what extent a clear gasway is left is dependent upon the driver of the machine. In the "C" type, the Arrol-Foulis has nothing but coal in front of the ram-head; and that also could fill a retort. The Guest-Gibbons machine, however, is handicapped to the extent of the space that the drag bars make on the return stroke of the ram.

Again, how many retorts will a machine or machines have to operate? It is a fact that simultaneous machines get through more retorts per hour than a machine which has separate charger and discharger arranged on one travelling frame; for, though the double operation in one stroke is slightly slower than either the charging or discharging operation separately, it is much quicker than the two together. Experience shows that the "A" type will in 30 minutes get through the same amount of work as one of the "B" or "C" type in 55 minutes. It must be borne in mind that this is number of retorts—not weight of coal; for if, according to our first question the "A" would put in as much coal as the "B" and "C," then on the present point the "A" machines have a great advantage.

If, however, the charger and discharger are on seperate travellers, the "B" and "C" types gain (except perhaps the Guest-Gibbons); being quicker in each operation, which would be conducted by separate drivers and attendants. Separate machines may require 6 men; combined machines, 4. When taking weight of coal into account with the same arrangement, if light charges are in vogue the time allowed for carbonizing would be proportionately less than with heavy charges; so that in (say) 24 hours approximately the same amount of coal could be dealt with by the "A" and non-combined "B" types.

In arriving at the number of retorts the machines can operate, it is very advisable to have plenty of time margin for rest and general attention. These machines work in hot and grimy places, and are subject to rough handling. The time comes when repairs are necessary; and 15 minutes per hour, for instance, is very little time in which to accomplish even the smallest repair. However, as a guide to the amount of work a machine of the three types can deal with, there is an instance of the "A" working 220 retorts, the "B," non-combined, 224, and the "C" (Arrol-Foulis 2 chargers and 1 discharger) 240. Combined machines should be capable of working from 100 to 130 retorts, and the Guest-Gibbons up to 150, because it saves a little time, inasmuch as it has not to travel after discharging a retort. It may be here mentioned that the "A" and "C" types are superior to the "B" type as regards cleanliness in the retort house. The latter create a considerable cloud of dust while charging.

Having settled on the type of machine that is most suitable for the work to be done, what points must help to a final decision? At one time, the distance between the bench and the retort house wall was a factor; but to-day telescopic rams, operating hydraulically or else by wire ropes or sectional chains, almost remove this consideration. At the same time, it is very advisable to have such a machine as will allow a passage round the back of it. This may mean the saving of labor. The attendant on the machine side—especially when the ascension pipes are on the discharging side only—has little more to do than open and close lids.

Another important point is that of reliability. The design of a machine has something to do with this. The less number of catches, timing gears, wearing parts, etc., the better. The motive power, particularly, should be provided by absolutely the best possible means, no matter what source it is derived from. Excepting the Arrol-Foulis, all the machines which have been mentioned are electrically driven. The motors should be totally inclosed. Our electrical friends say, with truth, that a motor should be well ventilated; but here we have a choice. Either we must do without ventilation and have clean motors, or have dust covered, sparking motors and ventilation. By all means, let us have totally inclosed motors of the very best make. The motors operating pushers should not be just sufficiently powerful to do the work, but inclined the other way, and take at least a 50 per cent. overload. The overload is very useful when the pusher is just beginning to move the coke, at which time 12 to 15-horse power is required; but when the coke is on the move, 5 to 10 horse power is sufficient.

We should not expect a piece of machinery to work in a hot, gritty

atmosphere and never require repairs or renewals; but we should make sure that any part could be easily replaced, without nearly pulling the whole machine to pieces. Let everything about the machine be the best of its respective kind, to ensure long life and safe working. This cannot be emphasized too much. To have a bench of 15 or 20 beds held up for a breakdown for even a couple of hours, is an extremely serious thing; and anyone who has to resort, temporarily, to hand stoking on machine charged beds, will quickly recognize that it is so.

Machine in Use at Preston: The Fiddes-Aldridge.—I want now to change the tone of this short paper, and make some remarks on the working of the two machines which are used at Preston. The statements are open to discussion; but it must be understood that the experience is local.

Two-and-a-half years ago we purchased a Fiddes-Aldridge machine, to face 84 retorts 22 feet long by 24 inches by 16 inches section. The two main requests we made to the makers were that it should be made of the best possible material, and that it should place 12 cwt. of coal in the retorts. For the first month, the average charge worked out to slightly below 12 cwt.; but over the second month, the average came out to just under 11¼ cwt. On looking into the matter, we decided that the carbon on the retort was occupying the space that ought to be available for coal. The retorts which had worked for 2 full months were cleared, and for the next week the average rose to nearly 12 cwt. We could not, however, keep all the retorts absolutely clear, and so went on for a time at about 11¼ cwt. per charge. In the meantime, inquiry showed that our coal could, with advantage, be broken smaller. This we did, and afterwards we were able to put in 12 cwt. on an average.

Another point which was a lesson to us was the frequency with which retorts had to be scaled for carbon—this time, not because of the charges going in, but because of the chain becoming wedged in the retort. The retorts are 24 inches wide by 16 inches deep, with straight sides and a fairly flat top. The Fiddes-Aldridge chain is 17½ inches wide inside, 13½ inches deep at the cross bars, and the greatest width outside the chain is 22 inches. You will see, then, there is very little clearance on the sides and top. Consequently, not much carbon can accumulate before the chain has to almost force its way through a tight place. We have found, with 8-hour charges, that it is policy to scurf after every 8 or 10 weeks.

In an endeavor to put in more than 12 cwt. charges with the Fiddes-Aldridge machine, we attempted to "hutch-up" the coal in the retort—that is, the chain was filled to its maximum capacity and pushed into the retort. After a return travel of about 6 feet, it was pushed forward about 18 inches again; and the operation was repeated about 4 times throughout the length of the retort. Each of the push plates, therefore, pushed the coal in front of it slightly forward; but it was only the pusher head that was effective each time, because during its travel back it levelled off the heaps which the back pushplates had formed. By this means, we were able to get some 12¾ to 13 cwt. into the retorts. But there were 2 drawbacks—we could not guarantee that the "hutched-up" coal had a gasway over it, and the extra length of time it took to get through the draw. We eventually gave up the method, as sagging retorts increased the difficulty of the gasway.

It is often asked, How much coal does the chain drag back on the return stroke? In ordinary working, the back end of the chain within the retort is not filled with coal for about 2 feet; and this is found to give sufficient floor space in the retort to take whatever coal is brought back. It is really dependent upon the fineness of the coal. A charge of round coal will require more room than a charge of dust. For one thing, the round coal occupies more length of the chain, and another thing is that the sides of the chain have more grip on the round coal than on the dust.

The motor usually fitted on the Fiddes-Aldridge machine is a totally inclosed Siemens. It is, of course, reversible, and used to give motion to all the operations. The only point I wish to mention in relation to this is common to all reversible motors. They must not be reversed until they have stopped, or, at the very least, the current must be off for a moment. Our men got into the habit of swinging the controller handle over without pause, and, unfortunately, burnt out a coil. The repair of this is the only noticeable expense the Fiddes-Aldridge machine has put us to in 18 months' working.

As regards upkeep costs, we have once renewed the flat steel strips on which the chain runs in the body of the machine, and several times renewed the lugs on which the pusher-head swings. I am within the mark when I say that $25 will cover these repairs. This does not include the repair to the motor.

The consumption of current used per ton of coal is 0.405 unit. This is taken over 20,000 tons of coal. The current is generated at 220 volts, and the average amount used on the various operations is as follows:

	Amperes.
Pushing coke out and charging coal	50
Withdrawing chain	48
Travelling from retort to retort	26
Hoisting	32
Lowering	16

I cannot give the cost of generating current, as gas engines drive the whole of the plant for elevating coal, generating current and elevating and screening coke. But to do all this work 65.2 cubic feet of gas is required per ton of coal, which, at 41 cents per 1,000 cubic feet, costs 4.16 cents.

The De Brouwer Combined Charger and Discharger.—After about 12 months, we decided to purchase a De Brouwer combined charging and discharging machine, solely with the object of putting heavy charges into the retort—our idea being to run 12 hours. If you will consider the length and section of our retort, you will find that 18 cwt. could nicely be put into it. Now, whether or not light or heavy charges are better from a gas making and residuals point of view, one thing is certain—the heavier the charge the less often has the charge to be dealt with in any particular period; and as it is as easy for men and machines to deal with heavy as light charges, providing there is a coke removing plant, the time occupied in working through (say) 10 tons of coal as heavy charges is much less than if it were handled in light charges. To my mind, men engaged in the retort house look at the time occupied more than anything else.

After a short period of working with 8-hour charges with the De Brouwer machine, we went on to 12 hours—attempting to increase the weight proportionately. We found, however, that 16 cwt. was about the best weight we could put in. Even with this weight, almost every charge had to have a rod put over it to level the coal and ensure a gasway. But when the gasway had been made, the swelling of the coal often stopped the passage of gas and created a second difficulty—that of pushing the coke out. So long as there was a clear way over the coke—no matter how small—and the whole was burned off, the coke could be pushed. But contact between the crown of the retort and the coke, for even 2 feet of length, was sufficient to stop the charge from being pushed. The reason for this, so far as our observations go, is that the blockage is enough to make the coke between the block and the pusher head buckle and cause further wedging. We now work 15 cwt. charges in 12 hours with comfort; and though we get a bigger make per ton than we did on 8-hour work, this is due to the fact that more time is allowed for carbonizing.

The motors of the De Brouwer machine are not totally inclosed: and we have experienced many troubles due to the grit getting into them. They are blown as clean as possible with compressed air each day, and kept free from grease. Many kinds of fuse wire have been tried with the object of finding the one which will take up the excess of current required for an instant to (say) put the coke on the move. It is surprising how fuse wire varies. Some, supposed to blow at 20 amperes, will hold far longer than they should—as much as 35 amperes. The best we have found is that made up of fine copper wire, with a covering of lead and tin alloy. The automatic cut-out, too, is not quite as reliable as one would wish. It will cut-out if the machine receives a sudden jar; and unless it is set well above a working margin, will also cut-out just when the pusher motor requires the little bit of extra current to move the coke.

A point which might be an improvement on the pusher is that the current is gradually cut off as the pusher approaches the end of its outward and inward strokes. On the inward stroke, this is satisfactory; but on the outward stroke, a charge which is thick against the pusher head, and which has to be forced through a mouthpiece carboned on the inside, very often requires the full current to get it through. We have dispensed with the stops which actuate the cut-out at the beginning and end of the strokes, and substituted an indicator to mark both the positions. We are, therefore, able to have full current on the motor during the whole of the stroke.

One of the difficulties of placing the same weight of coal in each retort with this machine, as possibly with others, is the difference in the size of the coal and its condition as regards moisture. The driver of the machine does not know what size of coal he has in the hopper until he is actually charging the retort. It is then too late to alter the speed of the belt. Round coal will naturally travel down the retort with more acceleration than fine coal, with the probability that

at the far end of the retort the charge is heavy—the small coal, not carrying so well, lying thickest at the near end. Wet, round coal appears to have the same effect as fine coal.

Another factor is the clearness of the retort floor from pieces of coke. We have found it good policy to use as large a pusher head as possible, so as to clear every particle of coke away. If pieces are left in, they retard the run-up of the coal on the floor of the retort. It is not necessary to scurf the retorts quite so often using the De Brouwer machine as with the Fiddes-Aldridge; the former having only a pusher head to enter the retort, and this is not so close fitting as the Fiddes-Aldridge chain.

The charger is, perhaps, the most expensive part of the De Brouwer machine in upkeep, as periodically one is faced with the cost of a new charging belt. They cost about $70 each, and deal with perhaps 11,500 tons. This runs out to .68 cent per ton. The current used on the machine per ton of coal averages 0.118 unit—taken over 30,000 tons. The average amount used in the various operations of the machine is as follows:

	Amperes.
Pusher, discharging coke	20
Pusher, return stroke	12
Charger, at the highest necessary speed	14
Charger, at the lowest necessary speed	8
Hoisting	30
Lowering	15
Travelling	16

The figures for both the Fiddes-Aldridge and the De Brouwer machines as the average amperage for each operation are perhaps of little account. When the operation begins, the pointer of the ammeter swings well above the average; but when the operation gets thoroughly under way, it remains fairly steady. It is at this point the average is looked for. The figures are, however, comparative. The time occupied in an operation also varies—being greatly dependent upon the condition of the retorts, the condition and size of the charge and other factors.

In the discussion which is to follow, and into which I have endeavored to lead you, I should like the question of what constitutes an ideal charge to enter. Many points relative to machines have, no doubt, been omitted, but one in particular—that of labor costs per ton of coal.

The paper having been read, the President (Mr. D. V. Hollingworth, F.C.S.), after complimenting Mr. Heald on the valuable information he had so concisely laid before the members, remarked that at Preston they were very fortunate in having so little expense in repairs. This was not the case in many gas works, where power chargers were in use. Remarking on the figures given, he stated that at the Birchenwood Collieries 10 tons of wet slack were pushed into the chamber at once, requiring some 35 to 40 amperes; and to discharge this, only 25 amperes, at 500 volts, were recorded.

Mr. J. Taylor (Mossley), on the invitation of Mr. Heald, gave his opinion of what a perfect charge should be. He also pointed out that projector machines gave rise to considerable dust, which was most objectionable.

Mr. M'Nicholl (Warrington) could not see how works of less than 100 million cubic feet capacity could economically install a power charger.

Mr. Carter (Garston) gave particulars of a new machine which was being tried at Liverpool.

Mr. Edmondson (Manchester) expressed the opinion that the ideal charge should lie well up the sides of the retort, and that the larger coal should be allowed to fall into the middle, where the charge was not so deep.

Mr. J. Bridge (Stretford) spoke with reference to the Guest-Gibbons machine, stating that a retort 20 feet by 22 inches by 16 inches could be charged with 12 cwt. of coal of an even depth of about 11 inches. The figures given by Mr. Heald were high; and the results at Stretford would at a future date be dealt with by his chief (Mr. Kendrick).

Mr. Hill (Stalybridge) and Mr. Murgatroyd (Bury) also joined in the discussion; asking several questions.

Mr. Heald subsequently sent to the *Journal of Gas Lighting* the following reply to the remarks on his paper: I am asked to give an answer to more than 25 direct questions, which have been put to me by 10 members; but during the discussion, opinions have been expressed on many of these points, and others, so that more than one-half of them have been answered. The unfortunate part is that the answers vary. The questioner has, however, the chance of judging which is the most correct.

It has been asked why the main fuse on the switchboard should blow before a fuse on a lower amperage on the same current. I quite admit it is a most unfortunate occurence, especially as the main fuse is supplying several motors; but the only thing I can suggest is that a good fuse is not being used. A tin fuse, for instance, is good for lighting installations, but of no use for power. It may be that it will blow regularly at the same amperage each time, and go quickly; but the one I prefer is that which will just hold over a little excess current before blowing out. In connection with fuses, I should like to point out the advisability of keeping the voltage steady, and not varying more than 5 points either side of the recognized figure, A reduced voltage means an increase of the amperes used; and it is a very easy matter to get over the limit of the fuse and blow it out. The voltage has no direct connection with a fuse wire.

Smoke and dust from projector chargers are, of course, very objectionable in any case, and particularly in those where the retort house is in a populated district. It is not the action of the machine itself that causes the dust. The coal dust, along with the coal, enters the retort, and coming in contact with the hot surface quickly gives off gas in such volume that the rush of gas to both ends of the retort carries some of the dust with it. One member said he gets more gas per ton with one system than he does with a De Brouwer machine charger (and another member has stated the reverse), and attributes the cause to this smoke question. It must, of course, contribute to it; but personally I do not consider it is very much.

A great deal has been said on the point of lightly-laid and heavily-laid charges. Projector machines, and those of the Arrol-Foulis type, put in what is termed a heavily-laid charge—heavily-laid in the sense that it is somewhat compressed. It has been pointed out that, though the Guest-Gibbons machine pushes coal in and may at the moment the pusher stops leave the coal somewhat solid, the drag bars lifting though the coal ease it up in the same way that one eases up a house fire with a poker. If a lightly-laid charge is an advantage, the Guest-Gibbons machine certainly scores a point. The West and Fiddes-Aldridge machines also succeed in doing this. I have often noticed how small the bulk of the resultant coke looks in comparison with the original charges from a Fiddes-Aldridge machine, taking all factors into consideration. My short experience with machines does not show that a lightly-laid charge gives more gas per ton than a heavily-laid one.

Several members have stated what they consider to be an ideal charge; and I am glad to find that one not only agrees with me, but he also is attempting to fulfill the conditions. My ideal charge is this: The whole retort should be full of coal, except a space, in the form of a half-circle, 6 inches in diameter, under the crown of the retort.

I have said that, so long as there is a gasway over the coal, the charge can be pushed out. If this is true, no difficulty arises in the charge on that point. Note, too, that the exposed retort surface is very little—certainly less than if the coal had a flat top, such as the Fiddes-Aldridge or Guest-Gibbons machine leaves. The nearest approach to this type of charge I have seen is at Sheffield, where Arrol-Foulis chargers are used. The coke in the retort looked as if you could just get your hand over it. The charges were certainly pushed out, and I believe the make per ton, with a mixture of Yorkshire and Derbyshire coal (which mixture may be said to be equal to Wigan coal), touches very closely on 12,400 cubic feet. This has been termed a compressed charge. It may be, but where is the disadvantage? But by what means this ideal charge is to be arrived at, is a problem. I do not know the sizes of the retort our friend uses; but I should certainly like to put more than 9 cwt. into a retort, even if not more than 10,000 cubic feet per mouthpiece were obtained, simply for the reasons stated in the paper.

My Chief (Mr. Samuel Tagg) recently provisionally protected a charger to achieve the object in view. It is after the De Brouwer type, but has two grooved pulleys (in place of one), with a common belt. The grooves are small, so as to get two fine streams of coal down either side of the retort. This idea is the result of many trials, which indicate that, at least, it will allow much heavier charges to be put in, and leave a clear way over the coal.

The only other point raised which requires any serious comment is the number of motors advisable on combined machines. Some makers place one; others three, and claim that all are not defective at one time. This may be; but let us take the pusher-motor. How long would it take to draw a charge of 17 cwt.? Somebody said 25 minutes. Quite so. How many men could you get together to keep 10 beds going? It can be done, of course, but it borders on the ridicul-

ous. Now I believe that, as regards cost, there is little to choose between (say) 3 motors and 1 motor and clutches. Personally, I prefer 1 motor of good make, well looked after, and not allowed to break down. It is far easier and cheaper to keep a machine right than to put it right when it has gone wrong.

How I deal with a bent De Brouwer ram when it is in the retort, and which is the best machine, are questions far apart from each other. The first has an extremely simple remedy; the second—well, any maker of machines will tell you. A member doubted the figure $25 for 12 months' repair on a Fiddes-Aldridge machine. I admit at once that, as a piece of machinery, I have nothing but admiration for the Fiddes-Aldridge apparatus as delivered to us. During 1912, we have used this machine very little, only about 2 months on 12 beds, and 6 months on one. Speaking from memory, I know of nothing but a few countersunk bolts booked against this machine, a pusher head straightening, and a pair of new lugs for it all that time. Again, for the benefit of this particular member, there is another Fiddes-Aldridge machine not very far from his residence on which not more than $35 has been paid for renewals in 4 years.

We have been 2½ hours discussing this charging and discharging machine question. I hope we are a little more settled in our ideas concerning the matter. I thank you for your attention and criticism, and trust that others will come forward during my year as your President and offer some such little paper. I know there is some reluctance on your part, because of the criticism of the Press on the publication. I can assure you, however, that, not only has the Press a kindly thought for our good, but our seniors also recognize our failings equally with our successes.

A vote of thanks was passed to Mr. Heald.

Publications.

[All Publications, Catalogues, etc., mentioned below, are kept in our office for the convenience of our patrons.]

"*Annual Report, Public Works Department, Boston.*"—This covers the year 1912 and is very complete, containing as it does figures respecting the bridge, ferry, highway, lighting, paving, sanitary, street cleaning, sewer and water divisions. Compiled by the various division engineers. Carries 12 illustrations, tables and maps.

"*Bulletin No.* 29," *Engineering Experiment Station.*—Issued by the Iowa State College Agriculture and Mechanic Arts. Deals with "Costs of Producing Power in Iowa with Iowa Coals."

"*Pipe Calking.*"—A useful pamphlet issued by Messrs. Lewis & Seely, Engineers and Contractors.

"*Bulletin of the Efficiency Society,*" *N. Y.*—Is dated January, 1913, and takes on the shape of an annual meeting number. It carries several condensed articles, that are really excerpts from the several meetings held in 1912.

"*The Bristol Company's Condensed Catalogue No.* 160."—Gives an *in extenso* description of its many useful instruments, with prices. The matters are handsomely and attractively presented.

"*Catalogue, Lloyd Gas Valve, No.* 800."—An attractive 50 page catalogue issued by the Lloyd Construction Company, describing the Lloyd gas valve.

"*Catologue No.* 8, *Garland Gas Ranges and Appliances.*"—A beautifully illustrated 64 page catalogue issued by the Michigan Stove Company.

"*Proceedings, Pacific Coast Gas Association, Vol.* 9."—This contains a complete account of two annual meetings—1911, held in Ashland; and that of 1912, in San Diego. Its get up is irreproachable.

Recent Patent Issues.

Prepared for the American Gas Light Journal by Royal E. Burnham, solicitor of patents and counselor in patent causes, 833 Bond Building, Washington, D. C., from whom illustrations and specifications of any patent mentioned below may be obtained for 20 cents.

1,051,875. Coke Oven or Gas Furnace. W. Feicks, Bloomfield, N. J.

1,051,876. Process of Obtaining By-Products from the Gaseous Distillation of Fuels. W. Feicks, Bloomfield, N. J.

1,051,882. Process of Treating Waste Gas Purifying Material. H. Gouthiere and P. Ducancel, Rheims, France.

1,051,956. Apparatus for Purifying Gases. H. W. Jacobs and H. H. Lanning, Topeka, Kas.

1,052,008. Mantle. C. M. Lungren, Bayonne, N. J., assignor to the Safety Car Heating and Lighting Company.

1,052,189. Gas Washing Apparatus. H. E. Theisen, Munich, Germany,

1,052,197. Gas Kindling Device. A. Wyner, Vienna, Austria-Hungary, assignor to H. Joachim, Paris, France.

1,052,232. Gas Lighting Valve. C. W. Francis, Omaha, Neb., assignor, by mesne assignments, to H. Fischer, same place.

1,052,337. Incandescent Gas Lamp. G. Helps, Atherstone, England.

1,052,420. Gas Burner. F. J. Lidstone, Pittsburgh, Pa., assignor, by mesne assignments, of one-half to S. W. McCoy, same place.

Items of Interest
FROM VARIOUS LOCALITIES.

Senator Neebe is responsible for the introduction of a bill in the Connecticut Senate which declares that, after January 1, 1914, it shall be unlawful for any gas company in the State to charge a rate in excess of 75 cents per 1,000 cubic feet. It is provided, however, that an additional charge, amounting to 20 per cent. of the face of the bill, may be charged in case the account is not settled within 10 days after the presentation thereof.

Advices by way of St. Louis, Mo., dated the 11th inst., are to the effect that the Laclede Gas Company is arranging for a 30 per cent. increase in the generating capacity of the plant, by the placing of an coke oven installation of 56 chambers, up to daily gas output of 2,800,000 cubic feet. It is said the plant proper will cover 40 acres of the 200 acre tract owned by the Company in the section bounded by South Broadway, the Mississippi river, Jefferson's Barracks and Klausman's Grove.

The religious political bunch that own Asbury Park, N. J., and who would mulct the gas suppliers of the Jersey Coast as much as possible, having had, after complaint to the Public Service Commission, and following a protracted hearing by that body in 1910-11, legally fixed for them a gross rate of $1,35 per 1,000, with 10 cents off for prompt payment, are now anxious to have another hearing, pertaining of course to another reduction. The spokesman or "writesman" this time was Mayor Reginald S. Bennett, of Asbury Park—he also "wrote" for Red Pank, Long Branch, Bradley Beach and Avon—who, alleging that the rates charged were exorbitant, asked for another hearing in respect of the petition. The Secretary of the Commission (Mr. Alfred N. Barber) in acknowledging receipt of the petition further remarks that "The present rate was fixed after a thorough investigation of local conditions." A remark that evidently brought little heart to Mayor "Reggie."

Mr. John Wilson, since 1911 foreman of the Old Colony Gas Company's plant at Weymouth, Mass., has resigned that position to take a place on the staff of the Key West (Fla.) Company.

The City Council, of Pomona, Cal., has issued a call for the usual spring balloting on public account, and the South Side Improvement Association managed to have interpolated in the announcement a paragraph to the effect that one of the items to be considered is whether or not the matter of a reduction in rates for gas, electricity and water shall be submitted to the Railroad Commission for readjustment.

A correspondent in Portland, Ore., forwards the following from a recent issue of the *Oregonian*: "To pave the way for invading the industrial field of Oregon, Messrs. W. W. Seymour and F. C. Brewer, who operate a chain of public utility plants in Western Washington, together with Messrs. H. E. Lounsbery, F. L. Shulb and C. J. Franklin, of Portland, have organized the North Pacific Gas and Electric Company, and have capitalized the same in $1,000,000. The purpose of the organization is to furnish water, gas, light, heat and power to individuals, firms, corporations and municipalities in Oregon. Messrs. Seymour and Brewer already operate gas plants at Hoquinam and Aberdeen and electric light plants at Chehalis, Centralia, Bremerton and Charleston. They propose now to extend their activity into Oregon, and for that reason have formed the local Company with local shareholders. Mr. Lounsbery is General Agent for the O. W. R. & N. Co.; Mr. Franklin is General Manager of the Portland Railway, Light and Power Company; and Mr. Shulb is prominent in the affairs of the Portland Flouring Mills Company. The Portland men, however, are interested only in their personal capacities, for they declare that they do not in any way represent their respective Companies in their association with the new enterprise."

Auditor C. H. Weak, the expert (and expert he certainly is) accountant who marshalls the financial array of figures that tell the story of the many Geist Company's properties, has so shown its proprietors that the latter have declared the regular semi-annual dividend of 3 per cent. on the preferred stock. It was made payable last Tuesday, and the transfer books will reopen next Saturday. It is worthy of note that the Wilmington (Del.) gas branch of the Company's

trading, for the twelvemonth ended December 31, 1912, showed an increase over the previous year, of 1,995,400 cubic feet, or the equivalent of 5 per cent. This is really remarkable in that many hundreds of old-type flat flame burners were superseded by burners of the Welsbach type. The total output for 1912 was 402,470,800 cubic feet. And, all-in-all, the remarkableness of the advance is the more pronounced when one remembers that in 1908 (the year in which it took over the plant from the Dobson syndicate) the output did not exceed 200,000 millions cubic feet the twelvemonth.

MR. THOS. F. COSGROVE, is a practicing attorney, with offices in Providence, R. I. For the illumination of these he "generally uses the electric current"; but to be sure of a lighting supply, at any time or all time, he also has a gas meter, as a sort of assurance that he need not be afraid to go to the office in the dark. Early this month the Providence Gas Company sent the attorney a bill for gas consumed in the former quarter, the face of which account called for $1.50. Cosgrove, however, knew he had not used that volume of gas in that period, so he set himself at work, figuring out (mentally of course) how much he did really burn—the Company had not sent a meter statement, its billing being based on the minimum monthly charge—with the result that the primal full charge of 50 cents was evolved. He offered the Company 50 cents, and the Company replied, "One dollar and 50 cents, or we will have to remove your meter." Cosgrove says they will not remove his meter, the retention of which will be done "Peacefully, if he can; forcibly if he must." However, it is safe to say that the only way to save it is to tender the Company $1.50; and quickly at that.

AT the annual meeting of the Salem (Mass.) Gas Light Company the officers elected were: Directors, Messrs. C. F. Prichard, Sidney Winslow, O. W. Rodgers, J. H. Smith, H. A. Hale and B. W. Sluman.

"B. V. V.," writing from Los Angeles, Cal., under recent date, says: "Early this month, a dinner was served in the Los Angeles Athletic Club, the host being the Los Angeles Gas and Electric Company, which corporation thus sought to entertain the employees in its service for 10 years or more. It speaks decidedly well for the corporation that 64 persons accepted the invitation. Mr. J. B. Ginther, Assistant Superintendent of Distribution (gas division), acted as Toastmaster. Another pleasing happening at the session was an act played by Mr. R. M. Adams, the Company's well-liked Superintendent, who presented each representative with a handsome pin, the design being that of an ancient Roman torch, carrying the letters 'O. G.,' which old guard contraption is to be the official badge of the body. It is proposed that the 'Old Guard' shall meet at least annually."

AT a regular meeting of the City Council, St. Petersburg, Fla., bids for the gas franchise, as originally called for by public advertisement, were opened. Only two proposals were made, the first bid being that submitted by the Petersburg Investment Company, whose backers proposed to pay the city the sum of $10,000 for a franchise permitting them to charge a selling rate of $1.60 per 1,000, gross, or $1.50 per 1,000, net. The other was submitted by Mr. W. C. McClure, and associates, whose offer was $2,000 for a franchise permitting them to charge $1.45 per 1,000 net, or $1.50 per 1,000 gross. Both proposals were referred, for consideration and report, to the joint finance-gas committees, the findings to be handed in time for presentation to the next general meeting of Council.

"B. A. M.," writing from Lewes, Del., under date of the 15th inst., says that an important purchase and sale measure was brought off in Shelbyville, Del., last week. The outcome was the purchase by the Delaware Light and Ice Company, purchased the Chincateague Light and Power Company from the Lewes Gas Company. The purchasers propose to begin at once the erection of gas and ice plants at Chincateague Island.

THE Administrative Board of the Richmond (Va.) Municipal gas plant has directed Superintendent Knowles to store 50,000 bushels of coke in the yards of the lower station, to be drawn on at will by the Superintendent of the City Home for distribution amongst the poor of the city. It is estimated that the coke sent out on like account last year was 6,200 bushels.

MR. J. I. MATTHIAS, recently appointed Commercial Agent by the Roanoke (Va.) Gas Light Company, is making quite a record, and he proposes to have every white housekeeper in the city using gas in one way or another in her domicile within the next twelvemonth.

REGENT JOHN H. BRITTON formally inaugurated the Department of Gas Engineering, University of California, the afternoon of January 30th. Introduced by President Wheeler, the glorious veteran outlined the cause or thought that led the gas men to propose this course, which is rendered possible through the guaranteeing of the yearly sum of $3,000, by the Pacific Coast Gas Association, which sum is individually subscribed quite after the manner in which the Practical Class of the American Gas Institute is sustained. Thus far a comprehensive exemplification of laboratory work has been arranged for, and a series of lectures by prominent gas men will be provided. Those already listed in the latter respect include Regent Britton, Prof. Robert Sibley and Messrs. E. C. Jones and L. P. Lowe. Regent Britton, Prof. Sibley and Prof. C. L Cory have been constituted a Committee to plan the investment of the funds contributed by the Association in a complete and scientific gas laboratory for the instruction of the students.

MR. CARL C. WITT, Engineer to the Kansas Public Utilities Commission, in a report to the Board submitted some time ago, declares that only ¼ the natural gas supply has been exhausted, that millions of cubic feet of gas were going to waste every day, and that the Kansas Natural Gas Company was not operating its property economically. Mr. Witt urged that the Commission adopt some rule or order on which all manufacturing gas should be shut off and the entire supply used for domestic purposes exclusively, even heating with gas being prohibited.

MR. HAROLD S. SCHUTT, who, since 1909, has been General Manager of the Wilmington (Del.) Gas Company, has been promoted to the post of General Manager of all the Clarence H. Geist public utilities in the States, which number many. The promotion became effective the 1st prox., and Manager Schutt's headquarters will be in the Land Title Building, Philadelphia. This is well-deserved promotion, and in awarding it Mr. Geist (clever judge of men that he is) accomplishes a double stroke—he rewards merit and strengthens his own position in a higher plane.

MR. SCHUTT'S successor at Wilmington will be Mr. A. J. McCorkindale, now in charge of the Geist gas, electric light and street railway properties in Ishpeming, Mich.

MR. J. F. BEALS is to have charge of the construction work on the new plant that is to be constructed at Madera, Cal. Mr. Beals, it may be remembered, is the engineer who supervised the construction of the works at Turlock, Cal.

"B. V. B.," writing from Detroit, Mich, under date of the 14th inst., incloses this: "Franchises permitting the Gratiot County Gas Company to operate in Alma, Mich., and the adjoining settlements of St. Louis and Ithaca, have been granted by the Councils of the named places. The propositions will come up for ratification at the elections next spring; but in all likelihood the trend of opinion in favor of the propositions is so marked that there will virtually be no opposition. In fact, even the settlement of Breckenridge, which heretofore has been (rather queerly, too), opposed to granting a gas franchise, will have changed its thought prior to the budding of the trees. The permanent or main location for the plant has not been positively determined as yet, but Alma will in all probability be selected because of its superior railroad availments and its useful water powers. The gross selling rate agreed on is $1.35, or net, $1.25 for prompt payment. Grand Rapid capitalists are behind the venture."

Correspondence.

[The JOURNAL is not responsible for the opinions expressed by correspondents.]

Manager Little Lets the Figures Stand.

CONSOLIDATED GAS PURIFICATION AND CHEMICAL COMPANY,
NASHVILLE, TENN., Feb. 13, 1913.

To the Editors, AMERICAN GAS LIGHT JOURNAL: I read the letter of Mr. R. H. Burdick, in your issue of February 3d, and, being Scotch, I am not quite sure whether or not Mr. Burdick is trying to make "fun" of my letter in the January 27th issue, and for this reason. He asks if it is possible that I meant 400,000 cubic feet per bushel purified by "Ferox," instead of the 40,000 cubic feet given in my letter.

To this I would say that he surely has not read the letter carefully, because I claimed 40,000 cubic feet purified per bushel of oxide *per change*, and indicated by the following sentences that this meant without air being used in the gas, without opening the boxes to pull air down, and without taking the oxide to revive it in the yard. I will let my figures go, until somebody can advance other figures, showing better results. I agree with Mr. Burdick that it is a too frequent custom to discard useful oxide containing less than 40 per cent. of sulphur. He is, however, in error in stating that he has received samples of "Ferox" from us, although I believe, some considerable time ago, we sent him a sample of the old oxide that we were then making. Mr. Burdick's very flattering remarks regarding the business policy of this Company are very much appreciated, and I hope that one of these days he will receive something larger than a sample of "Ferox."

If he cares to write and ask for a copy of our latest booklet on "Purification," I will be very glad to send it, for he will find therein records of work done by various kinds of oxide, in different countries, and these will, undoubtedly, be very useful if he desires to write later on some additional articles on "Purification of Gas."

Yours very truly, A. S. B. LITTLE, Gen. Mgr.

The Market for Gas Securities.

There was quite a further slump in Consolidated during the week, the low point reached having virtually been 130, the lowest in a long time. A quick recovery from the low followed, and to-day (Thursday) the opening quotations were 132¼ to 133. The foreign complications, gold exports, and timidity are the reasons for the slump; inherently, both on business and earnings accounts, the Company was never in bet position.

Brooklyn Union, which is absolutely neglected, is nominally 132 to 138. This is a very low quotation, for we imagine that no other Company in the country is earning a greater percentage on its volume of business. All outside gas securities are on the low side, although it is undeniable that gas bonds which have standing back of them are not allowed to remain long on the market.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

115 BROADWAY, NEW YORK CITY.

FEBRUARY 24.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked*
Consolidated Gas Co.	99,816,500	100	132⅛	133
Central Union Gas Co.—				
1st 5's, due 1927, J. & J.	3 5 0,000	1,000	103	108
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	105	106
Mutual Gas Co.	3,500,000	100	172	177
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	101	102⅛
New York & Richmond Gas				
Co. (Staten Island)	1,500,000	100	59	63
1st Mtg. Gold Bds. 5 p. ct.	1,500,000	—	98¼	100⅛
New York and East River—				
1st 5's, due 1944, J. & J.	3,500,000	1,000	103	105
Con. 5's, due 1945, J. & J.	1,500,000	—	96	100
Northern Union—				
1st 5's, due 1927, J. & J.	1,250,000	1,000	99⅛	101
Standard	5,000,000	100	69	70
Preferred	5,000,000	100	90	100
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	103	105
The Brooklyn Union	15,000,000	1,000	132	133
1st Con. 5's, due 1948, M. & N.	15,000,000	—	105¾	107
Yonkers	299,650	500	130	—
Out-of-Town Companies.				
Bay State	50,000,000	50	⅛	⅝
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	—
" 1st Mtg. 5's	500,000	1,000	97	100
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47⅛	50
Buffalo City Gas Co.	5,500,000	100	5	8
Bonds, 5's	5,250,000	1,000	59	60
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed				
Gold Bonds	7,660,000	1,000	104	106¼
Cincinnati Gas and Electric				
Co.	29,500,000	100	87	90
Columbus (O.) Gas Co., 1st				
Mortgage Bonds	1,500,000	1,000	96	98
Columbus (O.) Gas Lt. &				
Heating Co.	1,662,750	100	90¼	91
Preferred	3,026,500	100	75¼	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	13,480,084		118¾	119
Mortgages, 5's	3,400,000	—		—
General Mortgage 4⅓	10,661,000	—		—
Con. Gas Co., Baltimore				
City, 4½	2,751,000	—		—
Consolidated Gas Co. of N. J.	1,000,000	100	15	—
Con. Mtg. 5's	976,000	1,000	94	96
Bonds	75,000	—	—	100
Detroit City Gas Co.	6,580,000	—	—	50
Detroit Gas Co., 5's	881,000	1,000	75	80
" Prior Lien 5's	5,619,000	1,000	97	100¼
Equitable Gas & Fuel Co.,				
Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	133	136
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co.,				
1st Mtg. 5's	1,350,000	1,000	100	101
Hartford	750,000	25	190	200
Hudson County Gas Co., of				
New Jersey	10,500,000	—	130	133
" Bonds, 5's	10,500,000	—	104	106
Indianapolis	2,000,000	—	38	45
" Bonds, 5's	2,650,000	—	104¼	105
Jackson Gas Co.	250,000	50	82	—
" 1st Mtg. 5's	290,000	1,000	91	
Kansas City Gas Light Co.,				
of Missouri	5,000,000	100	—	86
Bonds, 1st 5's	3,822,000	1,000	98½	99
Laclede Gas Co., St. Louis.	10,000,000	100	101	102
Preferred	2,500,006	100	99	102
Bonds	10,000,000	1,000	102⅜	103
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,370,000	50	120	130
Madison Gas and Electric Co.				
" 1st Mtg. 6's	400,000	1,000	108	
Massachusetts Gas Companies, of Boston	25,000,000	100	99	99⅜
Preferred	25,000,000	100	94	94½
Montreal L. H.& P., Canada	2,000,000	100	235½	236
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	97	98
Bonds, 6's	5,000,000	—	127	128
New Haven Gas Co.	5,000,000	25	189	190
Peoples Gas Lt. & Coke Co.,				
Chicago	25,000,000	100	110	11[illegible]
1st Mortgage	20,100,000	1,000	102	102½
2d "	2,500,000	1,000	104	—
Rochester Gas & Electric Co.	2,150,000	50	88	—
Preferred	2,150,000	50	118	—
Consolidated 5's	2,000,000	—	104¾	105½
Pacific Gas and Electric Co.	15,500,000	—	61	62
St. Joseph Gas Co.—				
1st Mtg. 5's	1,000,000	1,000	98	98
St. Paul Gas Light Co.	2,500,000	100	—	—
1st Mortgages, 6's	650,000	1,000	104	105
Extension, 6's	600,000	1,000	112¾	115
General Mortgage, 5's	3,447,000	1,000	94	96
Syracuse Gas Co., N. Y.	1,975,000	100	50	55
Bonds	2,047,000	1,000	101	103
Washington (D. C.) Gas Co.	1,800,000	200	427½	430
1st Mortgage, 6's	600,000	—	—	—
Western Gas Co., Milwaukee	4,000,000	—	—	—
Wilmington (Del.) Gas Co.	600,000	50	—	—

MEETING TIMES OF THE VARIOUS GAS ASSOCIATIONS.

American Gas Institute.—Annual meeting, Richmond, Va., October 15-17, 1913. Officers: President, W. R. Addicks, New York City. Secretary, Geo. G. Ramsdell, 29 West 39th st., N. Y. City.

Canadian Gas Association.—Annual meeting Sept. 1913. Officers: President, Arthur Hewitt, Toronto, Ont.; Secretary and Treasurer, John Keillor, Hamilton, Ont.

Empire State Gas and Electric Association.—Annual meeting, New York City, Oct. 8, 1913. Officers: President, C. G. M. Thomas, Long Island City, N. Y.; Secretary, C. H. B. Chapin, 29 W. 39th street. New York City.

Gas Meters.—Monthly Section Meetings; Grand Commissioner, I. W. Petty, New York; Gen'l Sec'y, H. Thurston Owens, La Crosse, Wis.; New York Section, Chairman, Will W. Barnes; Secretary, A. M. Berg, Sip ave., Jersey City, N. J. Philadelphia Section; Chairman, L. R. Dutton; Secretary, H. F. Patterson, Jr., 831 Chestnut street. Cleveland Section, Chairman, F. R. Hutchinson; Secretary, Wm. Holtz, East Ohio Gas Co. New England Section, Chairman, F. M. Roberts, Haverhill; Sec., F. K. Wells, 69 Broad street, Boston.

Guild of Gas Managers of New England.—Annual meeting, March, 1913. Young's Hotel, Boston; monthly meeting, second Saturday. Officers: President, Walter G. Africa, Manchester, N. H.; Secretary, H. K. Morrison, Brockton, Mass.

Illinois Gas Association.—Annual meeting, March 19th and 20th, 1913. Chicago. Ills. Officers: President, H. O. Channon, Quincy, Ills.; Secretary-Treasurer, Horace H. Clark, 115 No. Oak Park avenue, Oak Park, Ills.

Illuminating Engineering Society.—Annual meeting,———— September, 1913. Meetings of Sections, monthly. Pres., Preston S. Millar; General Secretary, J. D. Israel, 29 W. 39th street, New York City. Sections: New York, Secretary, C. L. Law, 124 West 42d street. New England, Secretary, H. C. Jones, 10 High street, Boston, Mass. Philadelphia, Secretary, L. B. Eichengreen, Broad and Arch streets. Chicago, Secretary, J. B. Jackson, 28 North Market street. Pittsburgh, Secretary, J. C. Mundo, Oliver Building.

Indiana Gas Association.—Annual meeting, March 12 and 13, 1913. Indianapolis. Officers: President, Howard L. Olds, Indianapolis; Vice-President, Wm. Wallace, Lafayette; Secretary-Treasurer, Philmer Eves, Indianapolis.

Iowa District Gas Association.—Annual meeting, May 22, 23, 24, 1913; Burlington, Ia. Officers: President, C. W. Fair, Atlantic, Ia.; Secretary, G. I. Vincent, Des Moines, Ia.

Kansas Gas, Water and Electric Light Association.—Annual meeting, October—— 1913. ———— Officers: President, L. O. Ripley, Emporia, Kas.; Secretary and Treasurer, W. H. Fellows, Leavenworth, Kas.

Michigan Gas Association—Annual meeting, September——1913; ———— Officers: President, W. S. Blauvelt, Detroit, Mic; Secretary-Treasurer, Glenn R. Chamberlain, Grand Rapids, Mich.

Missouri Electric Light, Gas, Water Works and Street Railway Association.—Annual meeting, April, 1913; Mexico, Mo. Officers: President, P. A. Bertrand, Joplin, Mo.; Secretary and Treasurer, P. W. Markham, Brookfield, Mo.

National Commercial Gas Association.—Annual meeting and gas show, Dec. 1-6, 1913. Philadelphia, Pa. Officers: President, C. W. Hare, Philadelphia Pa.; Secretary, Louis Stotz, 29 West 39th street, New York City.

Natural Gas Association.—Annual meeting, Cleveland, O., May 20 22, 1913; Officers: President, M. B. Daly, Cleveland, O; Secretary, T. C. Jones, Delaware, O.

New England Gas Association.—Annual meeting, February, 19th and 20th, 1913 Boston. Officers: President, D. D. Barnum, Worcester, Mass.; Secretary-Treasurer, N. W. Gifford, East Boston, Mass.

New Jersey State Gas Association.—Annual Meeting, April—, 1913, ———— N. J.—President, William H. Pettes, Newark, N. J.; Secretary-Treasurer, Arthur H. Osborn Belmar, N. J.

Ohio Gas Association.—Annual meeting, February ————, 1913, Columbus, O.; President, John M. Garard, Columbus, O.; Secretary, L. B. Denning, Columbus, O.

Oklahoma Gas, Electric and Railway Association.—Annual meeting, Oklahoma City May, ——1913. President, F. W. Caldwell, Shawnee, Okla.; Secretary, H. V. Bozell, Norman, Okla.

Pacific Coast Gas Association.—Annual meeting, San Jose, Cal., September 16, 17, 18, 1913. Officers: President, Henry E. Adams, Stockton, Cal.; Secretary-Treasurer, Henry Bostwick, 445 Sutter street, San Francisco, Cal.

Pennsylvania Gas Association.—Annual meeting, York, Pa., April 9-11, 1913; Officers, President, H. H. Ganser, Norristown, Pa.; Secretary-Treasurer. W. O. Lamson, Jr., West Chester, Pa.

Society of Gas Lighting.—Annual meeting Dec., 11, 1913; monthly meetings, second Thursday. Place, New York City. Officers: President, Fred. S. Benson; Secretary, George G. Ramsdell, 29 West 39th street, New York city

Southern Gas Association.—Annual meeting, Charlotte, N. C., April 18-20, 1913, Officers: President, C. E. White, Montgomery, Ala.; Secretary-Treasurer, E. D. Brewer, Atlanta, Ga.

Southwestern Electrical and Gas Association.—Annual meeting. May 21, 22, 23 and 24, 1913, Galveston, Tex. Officers: President, F. M. Lege, Jr., Galveston, Tex.; Secretary H. S. Cooper, 405 Slaughter Bldg., Dallas, Tex.

Wisconsin Gas Association.—Annual meeting, May 14 and 15, 1913, Milwaukee, Wis. Officers: President, I. F. Wortendyke, Janesville, Wis.; Secretary-Treasurer, Henry Harmon. Milwaukee, Wis.